Bariatric Surgery:
Time to Standardize Nutritional Care

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Objectives

After this presentation, the attendee will be able to:

- Identify the mechanism by which the Roux en Y Gastric Bypass, Gastric Sleeve and Gastric Band effect hunger, satiety and nutritional status.
- Identify those areas of nutrition care where all dietitians working with bariatric patients can standardize their nutrition recommendations
- Identify standard post-op recommendations for post-op diet stages, vitamin and mineral supplementation and evaluation and treatment of special considerations.

Standardizing Nutritional Care
'the uncomplicated patient'

- Dietitians are the *"Nutrition Experts"*
  - It is important to understand how the surgeries work, *what surgery does and doesn't do*
  - *Bariatric surgery does change the body….*
  - *It does have nutritional implications..*
  - *It does not make the bariatric surgeon a nutrition expert.*

What is Weight Loss Surgery

A group of *'bariatric and metabolic'* surgical operations that impact the *physiological regulation of body weight and improve morbidity and mortality* rates

Types of Bariatric/Metabolic Procedures

- Gastric/Restrictive
  - Restricts total amount of food that can be eaten at one time; no alteration of food pathway (banding procedures)
- Combination
  - gastric manipulation
  - neural/hormonal changes (bypass and sleeve gastrectomy)
- Malabsorptive (not covering today's session)
  - Malabsorbtion of calories and micronutrients (BPD/DS)

MECHANISMS OF WEIGHT LOSS

PURELY RESTRICTIVE

- Vertical Banded Gastroplasty
- Laparoscopic Adjustable Gastric Band (LAGB)

VBG

Mechanisms of Weight Loss

ADJUSTABLE GASTRIC BANDING

- Unfilled Band is attached to tubing and port
- 6 weeks post-band placement:
  - Adjustments ("fills")
- High Revision Rate

THE EFFECTIVE ZONE OF ADJUSTMENT: ADEQUATE RESTRICTION

- Dysphagia
- Reflux - Cough
- Regurgitation

Fill too tight

- Satiety
- Small meals satisfy

Goal of fill

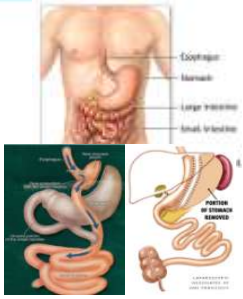
- Hungry
- Big meals

Need a fill

Mechanisms of Weight Loss
GASTRIC BYPASS AND SLEEVE GASTRECTOMY

Gastrointestinal Track is the largest endocrine organ in the body.

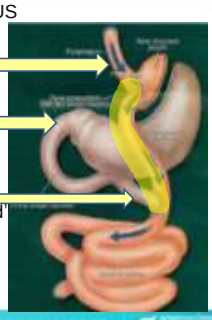
- The *Bypass* and the *Sleeve Gastrectomy alter parts of the GI Tract:*
  - influencing gut hormones and neural signals that regulate meal initiation and termination



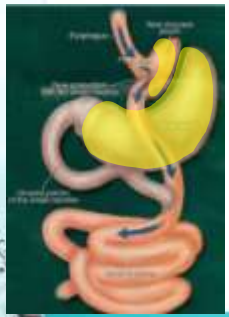
Roux en Y Gastric Bypass

Most common operation in US

- Small pouch is created
- Bypassing *gastric remnant*, *duodenum* and *proximal jejunum*
- Outlet from pouch is created and distal jejunum attached
- "no part of anatomy removed"



Mechanisms of Weight Loss: Bypass



1. Isolation of gastric cardia causing some *restriction*
2. Exclusion of distal stomach
   - *?Ghrelin*
   - *fundus* of the stomach is the single largest source of ghrelin
   - published data are heterogeneous regarding pre-post-prandial ghrelin

Mechanisms of Weight Loss: Bypass

3. *Partial vagotomy*

Transection of the vagus nerve has been reported to abolish the *orexigenic effect of ghrelin*

Variable degree to which RYGB causes vagal disconnection might account for impaired ghrelin secretion observed in some, but not all, patients after RYGB

Mechanisms of Weight Loss: Bypass

4. Exposure of *the distal jejunum to undigested nutrients* causes early delivery to the hindgut which *increases gut hormones:*
5. ***PYY and GLP-1***:
   - inhibit gastric emptying
   - inhibit appetite hormones
   - induce satiety
   - Resolution of Diabetes

Mechanisms of Weight Loss

Sleeve Gastrectomy

- *Restriction* from narrowed lumen
- *Gut Hormones:*
  - **GLP-1 levels post prandial are increased**; not sure about PYY
  - **Ghrelin:** Removal ghrelin producing portion of the stomach thought to decreased levels of basal and post-prandial ghrelin
- More research to come

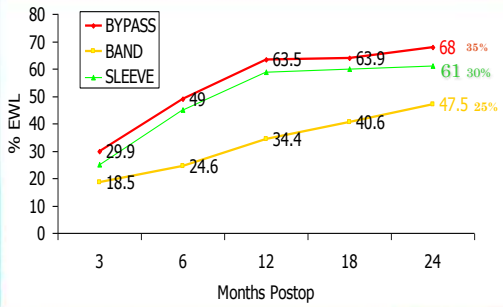
Possible Advantages of SG over GBP

- Avoidance of Dumping Syndrome
- Avoidance of Anastomotic Ulcers
- Eliminates the possibility of intestinal obstruction due to internal hernias
- Decreases incidence of some vitamin deficiencies.
- Patients who require Upper GI surveillance
- Less risk of ulcers when taking NSAIDS

Mechanisms and Disadvantages

- May exacerbate GERD (preservation of acid producing cells)
- Unknown long-term data regarding effectiveness on metabolic syndrome
- Unknown long-term data on nutritional deficiencies

WEIGHT OUTCOMES



N Engl J Med 2007;357:741-52, Bypass/Band; Sleeve data: Nocca et al. Obesity Surg 2008

WHICH BARIATRIC PROCEDURE?

Currently the Choice:

- ❑ depends on the local-regional expertise available (surgeon/center)
- ❑ patient preference, fear of surgery
- ❑ risk stratification: comorbidities, BMI
- ❑ limited capacity to predict success or failure in a given patient

Indications for Surgery

1991 NIH consensus conference

- Weight
  - BMI > 40 kg/m^2 OR
  - BMI > 35 kg/m^2 with co-morbid conditions
- Failure of non-surgical therapies

2004 Bariatric Surgery Centers of Excellence

- American College of Surgeons (ACS)
- American Society of Metabolic and Bariatric Surgery (ASMBS)

Bariatric Surgery Centers of Excellence

"*The decision to recommend surgery for patients with obesity requires multidisciplinary input*"

- Multidisciplinary clinical group reviews candidates to evaluate:
  - Indications for surgery
  - Comorbidities
  - Operative Risks
  - Contraindications for surgery
    - Medical
    - Psychiatric
    - Nutrition
      - No documented contraindications
      - Reason for Nutrition Assessment/Evaluation?

THE RD's ROLE IS MULTIFACETED

The dietitian's responsibilities include:

- *assisting the patient in making an informed decision about the procedure*
- *pre-evaluation and education*

Obesity 2005, Betsy Lehman Expert Panel

Pre-surgery Nutrition Assessment considerations

Assess and help patients to understand:

- What Surgery Changes
  - Physiological hunger/fullness
  - Weight Range, variable
- What Surgery does not change?
  - Environmental and external influences on weight
    - Understand the post-operative challenges

Pre-surgery Nutrition Assessment

- Life Style Behaviors

  Surgery changes the *body*, Not the *environment*
  - Triggers to non-hunger eating
  - Barriers to maintaining healthy life style behaviors
  - Nutrition intake, attitudes toward healthy eating and activity

Nutrition Care for Presurgery

- Develop an understanding of the limitations of surgery
- Begin to develop healthy lifestyle and eating habits
- Achieve better control of nutrition-related comorbidities
- Improvement of nutritional status
  - Pre-Surgery Nutritional Labs
    - *Test and Replete*

Resources: Practice Guidelines

American Association of Clinical Endocrinologists (AACE)

The Obesity Society (TOS)

The American Society of Metabolic and Bariatric Surgery (ASMBS)

→ *Clinical Practice Guidelines for the Perioperative Nutritional, Metabolic and Non-surgical support of the Bariatric Patient 'appendices'*

Mechanick JI, Kushner RF. Executive Summary; Endo Prac 14(3) 2008

Pre-Op Weight Loss

- Currently there are no standard protocols
- ASMBS Position Statement – *"Preoperative weight loss should be considered in cases where reduction of liver volume can improve the technical aspects of surgery"*
- Increasingly Centers are recommending pre-operative weight loss of about 10-15%
- There are no large, adequately powered randomized, prospective trials or meta-analysis
- Potential role for RDs to develop a standardized pre-op weight loss diet
  - Should be based on sound nutrition
  - May need to be individualized based on patient:
    - BMI
    - Co-morbidities

Bariatric Surgery Centers of Excellence

- **Requirement:** Establish procedures for*:
  - i. Pre- and post-operative patient education
  - ii. Counseling

Patients should be provided with educational material and access to preoperative educational sessions at prospective Centers….
AACE, TOS, ASMBS Guidelines

groups are resource efficient

*Source: ACS.org: online 9.2011

Pre-Surgery Guidelines: *Pre-Operative Education*

1. *Pre-Surgery Guidelines*
2. *Diet Stages Education*
   - *Shopping lists*
     - *Specific Full and clear Liquids*
     - *Specific Supplements*
   - *Sample meal plans*
   - *Sample vitamin/mineral supplement regiment*

Centers of Excellence: Post-Surgery

- Follow-up visits should occur frequently, for example: (RD in red)
  - 1)Two weeks postoperatively (advance diet)
  - 2) Several weeks later as indicated (nutrition groups, every 3 wks)
  - 3) Three months (individual RD to assess progress)
  - 4) Six months (months 4-9, life style groups)
  - 5) Nine months (individual RD to assess progress)
  - 6) One year (medical, biochemical surveillance, RD)
  - 7) Every year thereafter (medical, biochemical surveillance); monthly support groups

Source: ACS.org: online 9.2011 *proposed standard RD visits

Post-operative Diet Follow-Up

- Staged approach: texture; nutrient needs
  - Progression as tolerated
  - Large variation in tolerances
  - Variation in program approaches to diet transition
- Post-operative nutrition
  - Adequate hydration
  - Protein intake; fiber
  - Healthy eating for life
  - Long term behavioral changes

Lehman Foundation, *Obesity* 2005

Post-operative Diet

	RYGB/VSG		LAGB	
	Food	**Duration**	**Food**	**Duration**
Stage 1	Clear Liquid: low calorie, low sugar	1-2 days	Clear Liquid: low calorie, low sugar	1 day
Stage 2	Full Liquid: Five 8 oz servings of high protein, low sugar beverages	2 weeks	Full Liquid: Five 8 oz servings of high protein, low sugar beverages	2 weeks
Stage 3	Soft Foods: Advance as tolerated to smooth, soft foods after stage 2	3 weeks to 4 months	Soft Foods: Advance as tolerated to smooth, soft foods after stage 2	2 to 3 weeks
Stage 4	Solid Foods: Advance as tolerated after stage 3; healthy eating for life	Lifetime Maintenance	Solid Foods: Advance as tolerated after stage 3; healthy eating for life	Lifetime Maintenance
			Post Fill Protocol Every 6 weeks post-op	3-6 days following Fill

Stage I: Clear Liquids

Inpatient: LAGB (1) / RYGBP and SG (2)

- Clear liquids…
  - Start after gastrogaffin swallow (if applicable)
  - While in hospital: water
    - Floors: crystal lite, boullion
      - Kitchen: NPO, no trays, no confusion

Gastric Bypass
- No carbonation
- No sugar
- No calories
- No caffeine
- No alcohol

Diet Stage II: Clear and Full Liquid

Hydration/Protein

Full Liquids
<25g sugar

Start AT HOME: 2-3 days post-op
~2+ weeks duration

RYGBP: Special Considerations

Dumping Syndrome

- Caused by loss of pyloric sphincter actions leading to sudden distention of the jejunum by hypertonic solids or fluids.
  - Symptoms occur shortly after eating and can last for 30-60 minutes.
  - Symptoms include nausea, dizziness, weakness, rapid pulse, cold sweats, feeling very tired, cramps and diarrhea.

Mallory et al Obes Surg 2005

Dumping Syndrome

Fluids VERY slowly and keeping sugar
<25 grams per serving may prevent dumping

Nutrition Considerations: Protein

- DRI: 46-56 g/day for normal adults
- Approximately 60-80g protein/day usually recommended post-WLS
  - Case studies reveal early post-op patients tend to take in less than the 60-80 grams most commonly recommended, esp early post-op, do not 'push' protein at the expense of patients getting sick
  - Protein deficiency is not common post-bypass/sleeve Brolin, R.E., et al.
- Should be protein of high biologic value
  - Complete protein concentrates (essential/indispensible amino acids) Castellanos, et al.
    - Egg, soy, whey milk (casein/whey fractions)
    - Whey contains varying amounts of lactose Fujioka, K.
      - Whey protein isolates are lactose free Moize, et al.

Setting Standards: clear and full liquids

1. Limit choices, emphasize protein is important but not in excess
   - Give shopping lists of 'specific' full liquids
   - Provide schedule of liquid meals; supplements; minimum required amounts; food records
2. Follow patients during Diet Stage transitions
   - Groups effective and resource efficient
3. Transition:
   - Emphasize going at their own pace, listening to their body, mindfulness
   - Length of stage varies: 2 weeks liquid diet; transition to Stage 3 soft foods and advance to normal food diet as tolerated "great variation in patient response"

Early Nutritional Post-hospital Complications

- Dehydration
  - Dizziness, nausea, fatigue, dark urine
  - Weight early indicator
    - >2 lb/day = dehydration; monitor hypertension medications
- Nausea or vomiting
  - Most likely related to drinking/eating patterns
    - Eating too fast; eating too much; not chewing; dry/solid food
  - Rule out: ketosis, stenosis, or pregnancy
- Diarrhea
  - Think lactose intolerance first, then infection dumping, or post cholecystectomy

Diet Stage 3: Soft Food

Stage 3: Based on

1. Nutritional needs
2. Starting the eating/digestion process with more solid food
3. Texture: moist, minced, diced, ground, pureed; if you can't chew to 'mush' in your mouth… don't swallow

- Protein with soft fruits and cooked vegetables, 3 – 5 times a day:
  - Structure times
  - Plant, Animal Protein
  - Fruits: early on peeled
  - Vegetables: well cooked, salads usually well tolerated 6 weeks post op, individual tolerances
- Stop when comfortable 'don't push'
- Avoid liquids with meals, drink up to meal; wait 30 minutes after

Diet Stage III - Challenges

In a "normal" stomach, the stomach's wall, lined with three layers of powerful muscles, begins churning and mixing the food into smaller and smaller pieces. ***New pouch/sleeve does 'not' grind food***.

Early Post-operative Diet

Early post-op diet is a "*Nutrition Prescription*" (not the way patients will be eating for the rest of their lives, the way they need to eat now for nutritional needs and GI healing)

Nutrition Prescription:

1. 48-60 ounces of fluid a day
2. Protein AND fruits/vegetables: DAILY
   3 – 5 times a day (will vary depending on patient and hunger)
   Avoid *rice, bread and pasta* until protein needs are met
3. Daily Supplementation

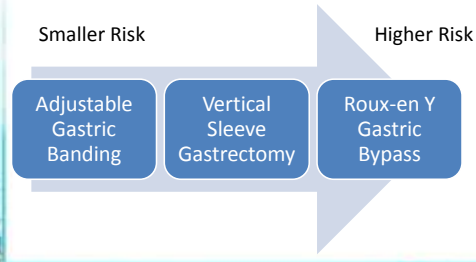
Stage 4: Solid Food

- Patient moves to more solid forms of moist protein to more challenging foods
- Long term maintenance: Healthy eating for life
  - Maintain adequate protein, fruits, and vegetables
  - Eating speed and amounts must still be monitored at this stage
  - Patient learns to identify physical hunger versus non-physical hunger cues
  - Structure timing of meals and snacks
  - Encourage healthy nutrition
  - Biochemical surveillance

"Late Dumping Syndrome": Reactive hypoglycemia

- Rapid absorption of glucose triggering exaggerated insulin release that results in rebound hypoglycemia
  - Occurs 1-3 hours after eating
- Manage with dietary manipulation
- Reported to occur: 2-9 years after RYGBP
- Patients who do not respond to dietary manipulation, need further endocrine evaluation.
  - reported cases needing partial pancreatectomy for relief of sxs due to pancreatic islet cell hyperplasia

Post-operative Micronutrient Supplementation



Micronutrient deficiencies post-RYGB

Causes:

- Bypass of the areas of absorption
- Decreased secretion of gastric acid
- Avoidance of nutrient-rich foods
- Nonadherence with supplements
- Poor food tolerability

Altered Absorption of Micronutrients

Vitamin/Mineral	Lab Monitoring	LRYGB	VSG	LAGB
Calcium	Bone Density*	✓	✓	✓
Iron	Fe, Ferritin, TIBC	✓	✓	✓
Vitamin B12	Vitamin B_{12}, MMA	✓	✓	
Folate	Folate	✓		
Thiamin	Thiamin	✓		
Vitamin D**	25-OH-Vitamin D & PTH	✓	✓	✓

*In peri- or post-menopausal women
**Often low in obese patients and should be assessed and repleted prior to surgery

Post-op Multivitamin-Mineral Supplement

- High potency

LAGB	RYGB/SG
100% of daily value	200% of daily value

- Time-Release and Enteric coated formulations should be avoided
- Complete formula with at least 18mg iron, 400mcg folic acid, selenium, copper, and zinc
- Children incomplete formulas should be avoided
- Men's MVI, Silver, or Women's 55+ should be avoided
- Iron should be separated from calcium by at least 2 hours

Monitoring Calcium and Vitamin D

- Supplementation
  - 1,200-2,000mg calcium/day
  - Standard vitamin D supplementation intake:
    - Ingest 800IU to 1000IU vitamin D_3/day
      - Amount in 1,200mg calcium (now in most brands)
- Markers:
  - High PTH > 60
  - 25(OH)Vitamin D $\leq$ 30 ng/ml
    - Supplement extra over the counter vitamin D_3 (cholecalciferol)
- Therapeutic Repletion
  - 25(OH) D $\leq$ 20 ng/ml
    - 50,000 IU vitamin D_2/week x 8-12 weeks (Ergocalciferol)

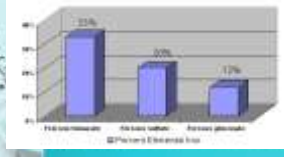
Aills, L., et al.

Iron Deficiency

- More typical to see deficiency 4+ years after gastric bypass due to:
  - Iron absorbed primarily in duodenum
  - Absorption of iron facilitated by acid secretion in the stomach; Bypass: decreased acid production in the small gastric pouch
- Postoperative changes in eating habits
- Menstrual losses
- Preoperative anemia; replete pre-op
- Non-adherence with daily supplementation
- Stomach ulceration

Monitoring Iron

- Markers for Iron:
  - Iron
  - TIBC-elevated
  - Ferritin
- Anemia
  - Low HCT, HGB
  - Low MCV

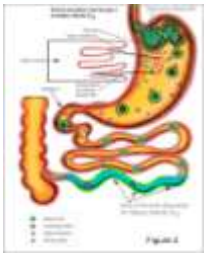


- Repletion:
  - Up to 300 mg a day of elemental iron with Vitamin C
    - Should be taken on empty stomach
    - Should be separated from calcium supplements
    - High doses of iron can be constipating so minimum dose for serum repletion/maintenance is recommended
    - If oral therapy failed or in cases of severe anemia, IV iron should be considered

http://ods.od.nih.gov/factsheets/iron

Vitamin B_{12} Deficiency

- Incidence:
  - Approx: 43% of patients at 15 months postoperatively
- Late complication
  - May take 6-18 months of vitamin B12 depletion before anemia seen
  - Deficiency increasingly common after 2-20 years
- Causes
  - GBP: Achlorhydria
  - GBP/SG: Reduced intrinsic factor production



Rhode B.M., et al.
Aills, L., et al.
Bloomberg, et al.

Vitamin B_{12} Deficiency

- **Markers for Vitamin B_{12}:**
  - Low Serum B_{12}
  - Elevated Methylmalonic Acid (MMA)
  - Elevated Homocysteine
- **Supplementation:**
  - 350-500mcg/day pill/sublingual/nasal
  - 1000mcg IM monthly if necessary

Rhode B.M., et al.
Brolin R.E.
Collene A.L., et al.
Kushner R.
Aills, L., et al.

Folate Deficiency

- Causes:
  - Decreased Absorption
  - Achlorhydria
  - Small body stores
  - Band patients may be limiting food sources
  - Vitamin B_{12} deficiency
- Supplemention
  - Adequate amount in MVI
  - Monitor women of child bearing age closely; replete, if needed, prior to conception

Aills, L., et al.
Bloomberg et, al.

Monitoring Folate

Markers

- MCV
- RDW
- RBC folate
- Methylmalonic Acid (MMA)
- Homocysteine

Thiamin Deficiency

- **Thiamin (B_1) Function**
  - Co-enzyme in carbohydrate and protein metabolism
- **Thiamin (B_1) deficiency can be due to**
  - Reduced food intake
  - Frequent/persistent vomiting
  - Reduced absorption: absorbed in proximal jejunum
  - Patients undergoing bariatric surgery may have significant thiamine deficiency before surgery: pre-operative deficiencies must be corrected
  - Small body stores

Carrodeguas, et al.

Monitoring Thiamin

- Markers:
  - Decreased serum thiamine
  - Decreased urinary thiamine excretion
- Supplementation:
  - MVI includes 100% DV thiamin
  - Additional as indicated per laboratory monitoring

Thiamin should be administered with/before glucose
100 mg added to IV hydration

Standard Nutrient Supplementation*

Supplement	Dosage
Multivitamin	1-2 daily
Calcium Citrate Vitamin D X 2-3/day Divided doses	1,200- 2,000 mg/day 400-800 IU of D (500-600mg)
Elemental iron not to be taken with calcium	18-27 mg/day elemental 40-65 mg/d menstruating females
Vitamin B12	350- 500 mcg/day orally/sublingual, nasal or 1,000 mcg/month intramuscularly
*Patients with pre-operative or post-operative biochemical deficiency states are treated beyond these recommendations	

Monitoring Micronutrients Post-Surgery

- Data suggest micronutrient deficiencies—with exception of folate—increase over time with RYGP
- Number of patients monitored over time significantly declines

Challenges: Nutrient Supplementation

- Standard supplementation may not be sufficient to prevent nutritional deficiencies
- Proper supplementation can be burdensome and expensive which may challenge patient compliance
- Involve Primary Care M.D.

Addressing Common Concerns

- Hair Loss: telagen effluvium
- Carbonation
- Caffeine: early post op
- Alcohol
- Weight Regain

Hair Shedding post-WLS

Human hair follicles have two states: ***anagen***, a growth phase, and **telogen**, a dormant or resting stage.

- Early post-op, **hair loss** is due to ***telogen effluvium*** and rarely due to protein malnutrition, vitamin and mineral deficiencies in the 'uncomplicated patient'…
- Be more suspicious of a nutritional contribution to post-bariatric surgery hair loss if any of the following occurred:
  1. Hair loss continued more than one year after surgery
  2. Hair loss started more than six months after surgery
  3. Patient has demonstrated low values of ferritin, zinc, or protein

Carbonation

- Recommendation: Should be avoided
- Limited research to support clinical practice of avoidance however, patients may experience abdominal discomfort — Aills, L., et al.
- No evidence showing carbonation stretches out gastric pouch
- Expert Opinion: Avoid Carbonation on a daily basis, avoid completely early post-op

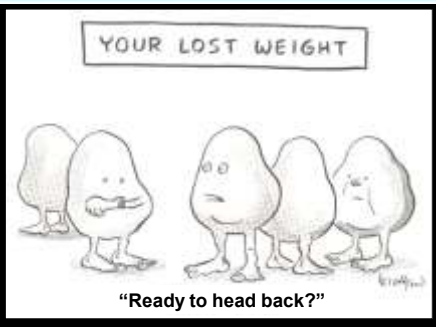
Caffeine

- Caffeine free beverages preferred
- Limited research to support clinical practice
- Caffeine concerns
  - Acid secretion stimulator — Marotta, R.B., et al. Weiss C., et al.
  - Dehydration a concern
  - Stomal Ulcer formation — Aills, L., et al.
    - Stomal ulcer formation prevented by separation of remnant stomach and gastric pouch — MacLean, R.D., et al.
- De-caffeinated coffee and caffeinated products
  - Unable to provide evidence for avoidance — Marotta, R. B., et al.

Alcohol

- Alcohol should be avoided
  - Increases risk of ulcer formation in non-WLS patients — Holstege, A.
  - Suggests increased risk of ulcer formation in WLS patients — Dallal, RM., et al. Sasse, K.C., et al.
  - Decreased alcohol tolerance after surgery
  - Liquid calories — Woodard, GA., et al. Hajedorn, GC., et al.
  - May contribute to vitamin deficiencies
  - Some evidence, addiction post-WLS

What about Weight Regain

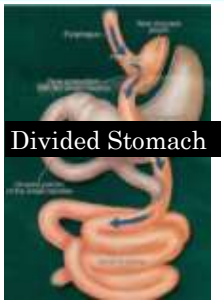


"Ready to head back?"

Significant Regain: Rule out surgical failure

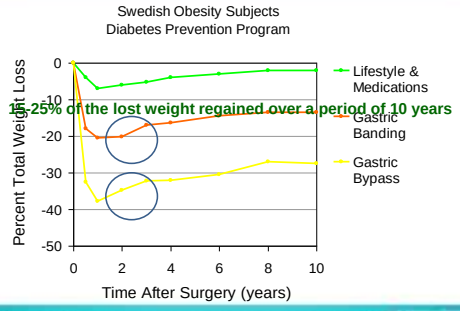
- Gastro-gastric fistula
- Staple Line Breakdown

UnDivided Stomach



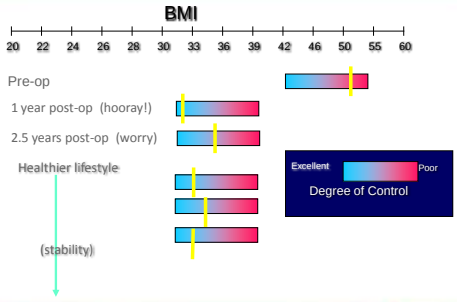
Enlarged anastamosis
- Large amounts of fluids with meals?
- Carbonation?
- Excessive intake at meal/snack?

Effectiveness of Obesity Treatments weight loss and regain expectations



1/3-25% of the lost weight regained over a period of 10 years

Life after Gastric Bypass



Internal versus External Regulation

".. Disruption of the gut-brain-gut axis (WLS) successfully reduces food intake and weight in all species living under naturalist conditions (animal models),

… results in people are less 'robust'…..

due to the unique human capacity for cognitive override of the autonomic maintenance of energy balance…"

World J Surg (2009) 33:1995-2006

Internal versus External Regulation

World J Surg (2009) 33:1995-2006

Post Operative instruction regarding appetite:

'OBEY YOUR STOMACH!'

Challenges: All Procedures

- Surgery is only a tool…
- After surgical intervention: "your body will work with you'
- Patients need to learn to identify physical hunger and satiety and respond
- Mindful Eating
  - Be present with the eating experience, be in tune to body

Prevention of Weight Regain

- Realistic expectations
- Adherence to scheduled visits (Pontiroli 2007)
  - Maintenance of regular physical activity (Faria, 2008)
  - 150 min/week (Evans 2007)
- Periodic Assessment to prevent or treat eating or other psychiatric disorders (Pontiroli 2007, van Hout 2005)
- Collecting food records and monitoring weight
- Participation in support groups (Orth 2008)

Summary and Take Home Points

- The dietitian plays a vital role during each step of the care of surgical patients.
- To best assess and treat patients the dietitian must understand the physiological changes that happen with each type of weight loss surgery.
- Close collaboration with all members of the multidisciplinary team ensures optimal care for patients.
  - Dietitians know Nutrition
  - Standardize Protocols, Use our Resources, Evidence-based Practice

Disclosure

Sue Cummings,MS, RD and Kellene Isom, MS, RD, LDN

- Nothing to Disclose