



# Bariatric Surgery Nutrition

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*Joint Meeting: Council on Renal  
Nutrition of GNY and Council of  
Nephrology Social Workers  
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# Objectives:

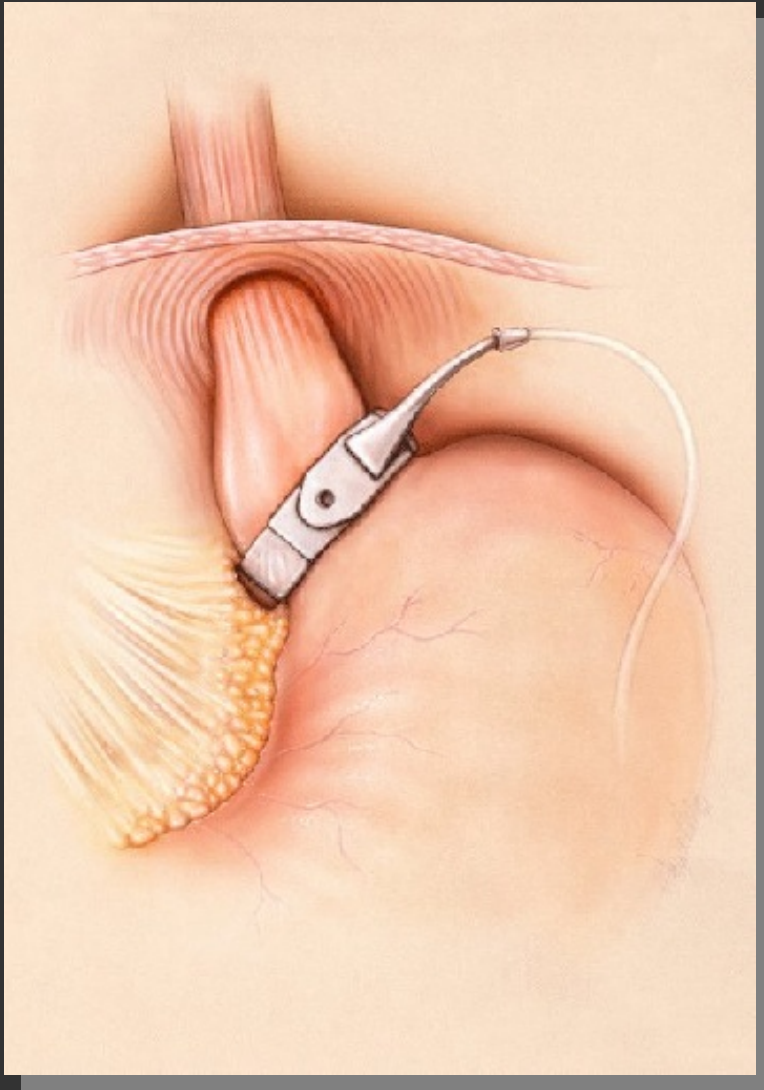
- Discuss the role of the RD in pre and post-op nutrition therapy in the treatment plan of the bariatric surgery patient
- Identify the major short and long term nutrient deficiency concerns associated with the 4 common weight loss surgeries
- Relate current available information on bariatric surgery in the renal patient with case studies

# Laparoscopic:

- Adjustable Gastric Band
- Roux-en-Y Gastric Bypass
- Sleeve Gastrectomy
- Biliopancreatic Diversion w/Duodenal Switch

# Adjustable Gastric Band

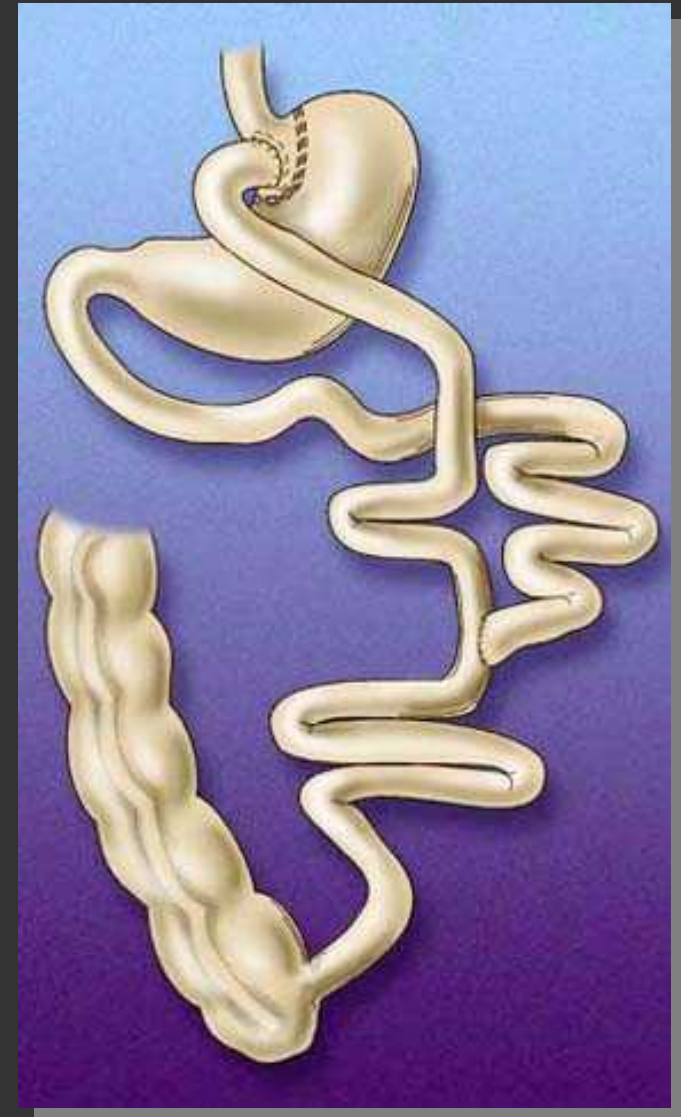
“Lap-Band”<sup>®</sup>



- Silicone band
- Adjustable
- “Reversible”
- Purely restrictive
- ~40-60 % excess wt loss

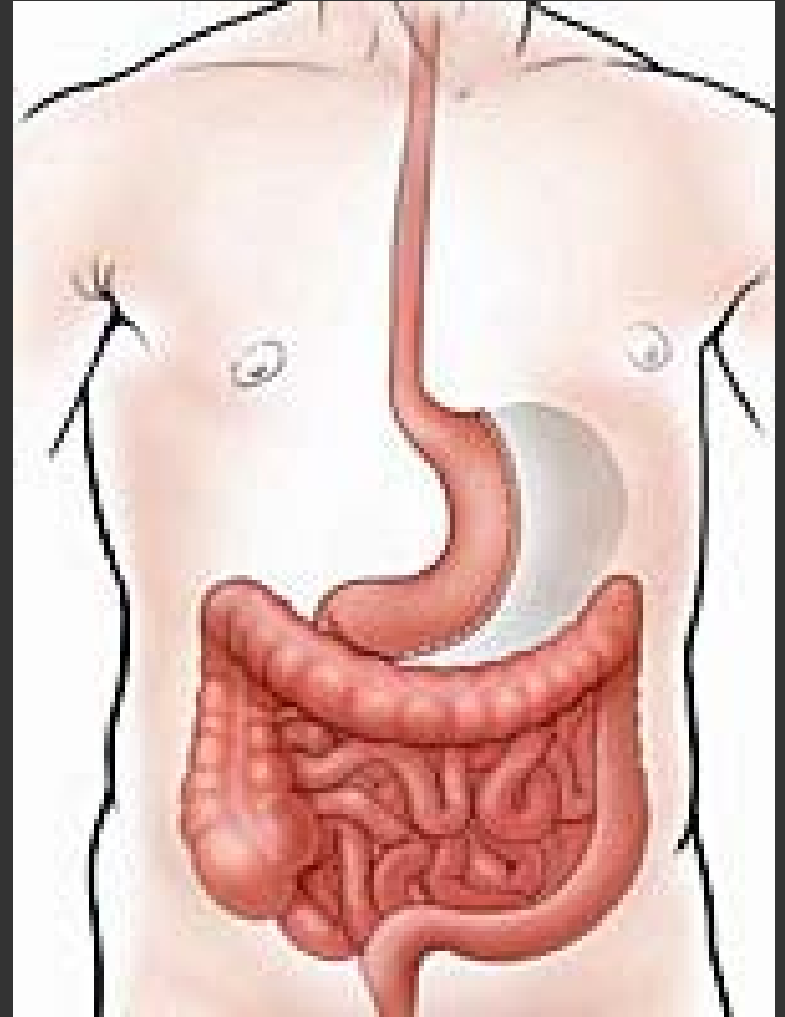
# Roux-en-Y Gastric Bypass

- 15-30 cc gastric pouch
- Roux limb, Y limb
- Divided stomach
- ~50-70% excess weight loss
- Imparts restriction, malabsorption, & impacts hunger hormones
- Resolution of Diabetes in ~ 80%



# Sleeve Gastrectomy

- 100-150 cc gastric pouch along lesser curve
- “vertical gastrectomy”, “banana stomach”
- Imparts restriction, & impacts hunger hormones
- compromise operation?
- ~50% excess weight loss

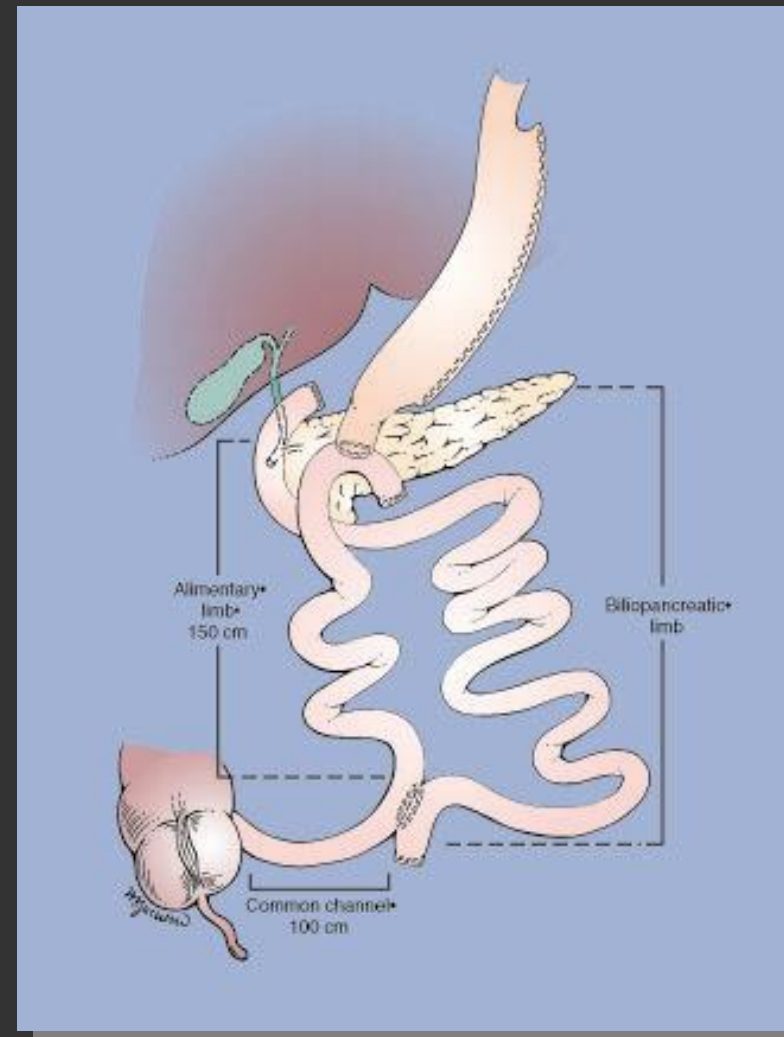


# Sleeve Gastrectomy

- 1st stage surgeries for hi BMI
- Older patients
- Patients for whom a Band is contraindicated, or who don't like the idea of a foreign object in their body, or are not ready to 'commit' to RYGB
- Trend towards more sleeves

# Biliopancreatic Diversion w/Duodenal Switch (BPD-DS)

- “Sleeve” gastrectomy
- Alimentary limb
- Biliopancreatic limb
- Common limb
- Significant malabsorption
- ~65-80% excess wt loss



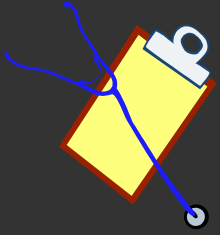


# Role of Nutritionist

- Pre-op Assessment and Diet Instruction
- Hospital Visit
  - \* post-op day 1 or 2
- Out patient Follow-up
  - \* 4 wks, 3 mos, 6 mos, 1 yr, annually



# Nutrition Assessment

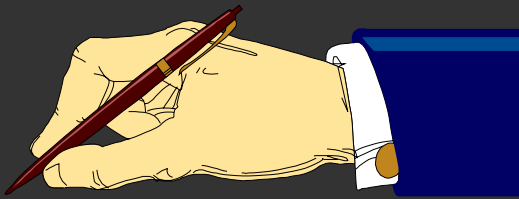


- In-depth diet history
  - \* Dieting attempts
  - \* Multidisciplinary programs
  - \* Eating habits: bingeing, snacking, vegetarianism, food allergies
- Assessment of knowledge of basic nutrition principles: macronutrients, label reading, portion estimation
- Assessment of readiness to change
- Motivational interviewing



# Nutrition Education

- One hour individual interview
- Written materials
- Quiz and agreement letter
- Determine compliance and candidacy



## Agreement Statement

I understand I that I will need to take supplements (which may not be covered by insurance) for the rest of my life and make follow-up appointments with my doctor and nutritionist. I also understand that if I do not follow-up with my health care professionals, have blood-work taken as recommended, and take all of my supplements, every day, I will be putting myself at risk for developing serious health problems such as anemia, neurological problems, bone fractures, and other vitamin deficiencies. I will do my best to exercise and follow the nutrition advice that is given to me so that I have the best chance possible of successfully losing weight and maintaining my healthier weight.

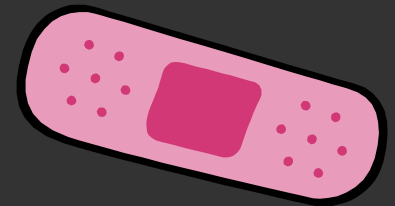
# Hospitalization



- Length of stay:  
1 day: band; 2-3 days: all others
- Day #1 post op: UGI
- Diet- specialized menus
  - \* Clear liquids: NCS, Powerade  
*tea*                      *broth*                      *diet jello*
  - \* Puree: NCS, high protein low fat  
*yogurt*      *puree meats*      *cottage cheese*  
*skim / lowfat milk*                      *mashed potato*  
*hot cereal*                      *applesauce*

# Hospitalization (cont'd)

- In-patient visit, review:
  - \* dietary guidelines
  - \* supplements
  - \* answer ?s
- Sips & Teaspoons
  - \* 4-6 oz/waking hour, no straw/bubbles
  - \* 1/8-1/4 C/meal      \* 3 meals + 1 snack
- No Drinking With Meals
- Encouragement



# Overview of Nutrients

- Protein

  - ✓ 60-80 grams (80-120)

- Fat

- Carbohydrates

- Supplements

  - ✓ Standard vitamins/minerals: MV, calcium citrate, iron (except band/sleeve)

  - ✓ Extras: vits A & D, B-12/B complex, zinc

- Fluids



# Nutritional concerns

- Preop\*
  - vit D, iron, B1
- Short term
  - Dehydration (vomiting)
  - Thiamine defcy
- Long term
  - Protein defcy
  - Metabolic bone dz\*
  - Iron defcy Anemia\*
  - Thiamine / other B vitamin defcy\*
  - Other fat soluble vits

# Follow-up

- Diet recall
- Review of guidelines, lab values (1<sup>st</sup>@ 3 mos), supplementation, activity level
- Weight/BMI
- Support
  - Online- chat rooms, list-serves, newsletters
  - In-person group meetings, 1-on-1 counseling



# Goals

- Weight loss and improvement of comorbidities
- Prevention of deficiencies/malnutrition
- Maintenance of healthy weight
- Improve quality of life



# Special concerns w/renal pts

- Pts with impaired renal function: should get calcium acetate, not citrate (aluminum abs'n)
- Risk of enteric hyperoxaluria leading to kidney stones/ irreversible kidney damage in pts with baseline mild CKD d/t intestinal bypass (RYGB/DS)
- Post txp pts (or those on many meds) will they be able to take post op? must be crushed, consider GT
- Work with the renal RD!
  - Fluid and protein needs
  - Appropriate nutrient & liquid supplements

# Kidney Transplant and Obesity

- Reviewed graft failure and complications d/t morbid obesity post kidney transplant; n=66
- Grp 1/ BMI >35
  - underwent a diet plan yet gained weight post txp
- Grp 2/ BMI >35
  - underwent successful diet counseling post txp
- Grp 3/ BMI <35
  - did not undergo a diet regimen
- Findings: Grp 1- ↑postop compl'ns, ↑op time, ↑LOS; no signif change in postop compl'ns b/w 2 & 3. Poor graft function, ↑comp'ns in pts who gained wt post op; good outcome in pts that lost wt pre/post.
- Role for pre txp wt loss procedures?

# Improvement & stabilization of CKD post RYGB

- Can bariatric surg alter the course of established renal dz?
- n= 45 nontxp pts w/CKD who were s/p RYGB, preop mean BMI 48.9
- 9 had resolution, improvement, or stabilization of kidney fxn
  - 2/9: on or ready for, dialysis
  - 5/9: primary dx of focal segmental glomerulosclerosis
  - 2/9 membranous glomerulonephritis
  - 2/9 diabetic nephropathy
- Results: No serious complic'ns. 1 pt had biopsy-proven membranous glomerulonephritis that completely resolved (9 yrs FU post op) The 2 dialysis pts were able to d/c dialysis for 27 & 7 months, respectively. The remaining pts had stable renal function for 2-5 yrs postop.
- RYGB may result in stabilization or improvement of CKD
- Excess wt loss seems to have the most positive effect in pts w/obesity-related focal segmental glomerulosclerosis.

# Case Study #1

- JC 31 yo M first seen 4/2005
- 362# ( 164 kg ) / BMI 56
- CRF d/t DM (15 yrs)
- Recently started on HD M-W-F (3 mos)
- PMHx: PUD, cellulitis, DM neuropathy, hyperlipidemia, gout
- Meds: glucatrol, lipitor, phoslo, avandia, neurontin, folic acid, mv, epogen, xanax

- RD preop eval:
- Wanted LAGB
- Large portions, frequent snacking, strong family hx of obesity
- WW 26#, Nutritionist 80#, Optifast, Atkins 30-40# , Dieting on own + gym.
- Very motivated:
  - dad died @ 52 yo; R/T kidney failure
  - Had young daughter

- Denied by GHI: lack of supervised diet hx
- Appealed- letter from surgeon + documents provided: overturned
  
- 6/2005 LAGB
- FU: snacking during HD (fruit, pretzels, crackers) difficult time w/FR
  - Collaboration w/renal RD re his protein needs
  - Protein foods for satiety/ decrs snacking
- 2 adjustments
- ↓ 122# / 1 ½ yrs (lost some wt pre WLS)

- 7/2006 txp: living related donor
- 2007 drainage of fluid from wound
- 2008 PNA → IV antibiotics → DVT from PICC
- 1/2009
  - 275# / 125 kg (362# / 164 kg) BMI 42 (56)
  - Meds: Cellcept, Glucotrol XL, Lantus 50 U, Lipitor, Neurontin, MV, Paxil, Prograf, Nifedical XL

# Case Study #2

- DY 23 yo F first eval 3/2004
- 244# / 111 kg BMI 42
- S/P kidney txp 1998, prev on PD
- Hx gout and chronic rejection
  
- 5/2004 lap RYGB and GT in remnant\*
  - meds

## ■ 6/2004 RD FU

- Difficulty eating/ drinking
- Recall (po):
  - B- 3 tsp tuna
  - L- 3 tsp cottage chs
  - Sn- ½ C apple sauce
  - D- 6 tsp ground beef
  - Fluid: 10 oz water
- Recall (GT):
  - 16 oz protein shake
- As per mother: creat had increased to 3.0
- Dehydration, Learning new habits, Fear factor
- Use her GT more until able to meet needs po

- 3/2005 – C/O abd pain
  - Cellcept, prednisone, lisinopril, na bicarb, iron, prograf, epogen, calcium, lipitor, MV
- Lost 99# / 1 yr
- 145 # / 66 kg BMI 25
- EGD- large ulcer- Prevacid solutab
- 2006 still requiring Prevacid for heartburn
- (no further FU@ our program)

# Case Study #3

- GL 46 yo F first seen 8/2004
- 274# ( 125 kg ) / BMI 49
- ESRD (unknown etiology) on HD x 3 yrs
- PMHx: sleep apnea on CPAP, HTN
- Meds: MV, renagel, HTN med

- 10/2004 RD preop eval
- Wanted RYGB
- Overeating, poor food choices
  - fried foods/McD's, sugar sweetened bevs
- 1977 amphetamines lost 70#, 1981 Slimfast lost <5#, 2004 worked w/internist to follow a diet plan lost <5#
- Fairly motivated but we discussed need for a 2<sup>nd</sup> visit, goals: make some changes, improve nutrition knowledge re portions
  
- 11/2004 2<sup>nd</sup> pre op visit
- Had purchased a food scale & measuring cups, kept food logs, eating more baked foods, less sweet drinks, dry wt down 1 kg. Cleared for WLS

- 1/2005 RYGB
- 2/2005 lost 26#
  - Getting iron during HD, taking her renal MV (crushed) and chewable phosphate binders w/meals
- 4/2005 lost 67#
- 7/2005 lost 92#
- 11/2006 lost 105#
- 1/2007 lost 118#
  - 156# / 71 kg BMI 28 (49)
- 8/2007 Txp (cadaveric)
  - Had been on HD x 6 yrs, on Txp list x 5 yrs

- 9/2007 delayed graft fxn, fungal infxn
- 11/2007 leukopenia put on neupogen
- 8/2008 regained 5#
- 9/2008 lost back to 154#
- 10/2008 ventral (mesenteric) hernia repair
- Currently (1/2009) doing great >4 yrs post RYGB
  - 154#/ 70 kg (down 120#) BMI 29
  - Bun/Creat 20/1.38
  - Vit D 28
  - High PTH- somewhat non compliant w/ca supplts
  - B12 338
  - H/H sl low, no iron deficiency



**Thank you**  
**Questions?**

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