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Pre- and Post-Operative Medical Care of the Bariatric Surgery Patient
Disclosures

- none
Objectives

- Clarify the referral and clearance process for patients considering bariatric surgery
- Navigate pre and post operative medication changes
- Identify early and late post-op complications
- Post-operative vitamin regimens and monitoring
- Special medication considerations
- Helping patients with weight regain
Getting Patients to Appropriate Treatment

- Several medical organizations have developed guidelines for obesity treatment
- Patients with BMI 25-27: focus on primary prevention with dietary and lifestyle intervention
- Patients with BMI 27-30 and no co-morbidity: treatment with dietary and lifestyle intervention
Getting Patients to Appropriate Treatment

- Patients with BMI 27-30 with co-morbidity: intervention with diet, exercise and possible pharmacotherapy. Refer to specialist/multi-disciplinary team if needed.

- Patients with BMI 30-35: intervention with diet, exercise and possible pharmacotherapy. Refer to specialist /multi-disciplinary team if needed.

- Patients with BMI 35-40 with co-morbidity: treatment as above, and consider referral to bariatric surgeon.
Getting Patients to Appropriate Treatment

- BMI 40 and higher- Referral to specialist for intervention with diet, exercise, possible pharmacotherapy. Referral to bariatric surgery if no contraindications. Continue other interventions during work-up
Criteria for Bariatric Surgery

- BMI of 35-39.9 with obesity related illness (generally 2 or more)
  - HTN
  - DM2
  - NASH
  - OSA
  - Lumbar stenosis

- BMI 40 and over regardless of co-morbid conditions
Contraindications to Bariatric Surgery

- Uncontrolled or severe psychiatric illness
- Active substance abuse
- End organ failure (unless weight loss surgery is in pursuit of transplant)
- Expected pregnancy in 12-24 months.
- Uncorrectable coagualopathy
- Esophageal varices
- Inability to understand or comply with post-op instructions
- Active CAD/CHF
Bariatric Surgery Work-up

- Surgical consult
- Nutrition consult(s) and clearance
- Psychological clearance
- +/- PCP clearance
- EKG
- +/- Cardiology clearance
- CXR
- Labs- BMP, LFTs, Vitamin levels, A1c, CBC, thyroid, h. Pylori
- Financial clearance /Insurance approval
- Other specialty clearances if applicable
Meet Mrs. W

- Mrs. W is a 44 yo female with BMI 38.5 (225 lbs, 5’ 4”’’) and DM2, HTN, HLP and CKD3. She is currently on glipizide BID and Lantus 40 units nightly with A1c of 6.3%. Her HTN is well controlled on lisinopril and amolodipine. Mrs. W is interested in weight loss surgery to improve her diabetes. Which weight loss procedure would benefit her most?
Outcomes Calculator (Univ Michigan)

WEIGHT LOSS RYGB –

LAPWEIGHT AT YEAR 1 (LOST) -150 (75)
WEIGHT AT YEAR 2 (LOST) -148 (77)
WEIGHT AT YEAR 3 (LOST) 154 (71)

COMORBIDITY RESOLUTION RYGB – LAP

- INSULIN DEPENDENT 77%
- HYPERCHOLESTEROLEMIA 79%
- COMPLICATIONS
  - ANY 10.43% SEVERE 4.20% DEATH 0.11%
VSG

- **Outcomes Calculator**
- **WEIGHT LOSS SLEEVE GASTRECTOMY**
  - WEIGHT AT YEAR 1 (LOST) - 163 (62)
  - WEIGHT AT YEAR 2 (LOST) - 163 (62)
  - WEIGHT AT YEAR 3 (LOST) - 169 (56)
  - COMORBIDITY RESOLUTION - SLEEVE GASTRECTOMY
    - INSULIN DEPENDENT 66 %
    - HYPERCHOLESTEROLEMIA 66 %
    - COMPLICATIONS
      - ANY 5.36 % SEVERE 2.32 % DEATH 0.06 %
A rapidly changing patient

Medication Changes in the Immediate Pre- and Post-Operative Periods
Crush/chew/liquid Medications

- 3 months for sleeve gastrectomy
- 6 months for gastric bypass
- Any psych meds should be changed 3 months prior to surgery
- https://www.ismp.org/recommendations/do-not-crush
Liquid Diet

- Starts 2 weeks pre-op
- Protein shakes and sugar free liquids only
- Decrease in sugar, carb, sodium and overall calorie intake

Consider

- Digital monitoring programs
- Decreasing HTN, DM and diuretic meds at this point
Medications to Hold

- NSAIDs
- Fish oil/Omega 3
- Herbs or other OTC supplements (not from RDs)
- Warfarin- to bridge or not to bridge?
- Steroids and immune suppressants- need taper schedule and when to resume
- SGLT-2s
Post-op Medication Changes

- Rapid changes in blood pressure and blood sugar
  - Limited overall intake
  - Fluid status
  - Increased circulating levels of GLP-1
  - Weight loss
Considering These Changes...

- Tolerance for some mild hyperglycemia over hypoglycemia
  - stop sulfonylureas
  - stop SGLT2s (but you already did remember!)
  - stop prandial insulin or minimal ISS only
  - reduce long-acting insulin
- Patients without heart failure may not need diuretics
- Decrease doses of other BP meds
Early Post-Op Complications

- Similar risks to any other abdominal surgery
- Nausea vomiting
- Dehydration
- Leaks
- Strictures, twists
- Venous thromboembolism
- Patients seldom receive a foley during surgery, so if UTI symptoms check UA and culture.
Late Post-Op Complications

- Ulcer/perforation
- Gallstones
- Small bowel obstruction
- Internal hernia
- Lactose intolerance
- Nausea and vomiting
- Adhesions
- Dumping syndrome
- Reflux
- Vitamin deficiencies
- Protein malnourishment
- Hair and skin changes
- ETOH abuse
Possible complications of weight loss surgery

- Allergic Reactions: From minor reactions such as a rash to sudden overwhelming reactions that may cause death.
- Anesthetic Complications: Anesthesia used to put you to sleep for the operation can be associated with a variety of complications up to and including death.
  - Bleeding: From minor to massive bleeding that can lead to the need for emergency surgery transfusion or death.
- Blood Clots: Also called deep vein thrombosis and Pulmonary Embolus that can sometimes cause death.
- Infection: Including wound infections, bladder infections, pneumonia, skin infections and deep abdominal infections that can sometimes lead to death.
- Leak: After operation to bypass the stomach the new connections can leak stomach acid, bacteria and digestive enzymes causing a severe abscess and infection. This can require repeated surgery, and intensive care and even death.
- Narrowing (stricture): Narrowing (stricture) or ulceration of the connection between the stomach and the small bowel can occur after the operation. This may require endoscopic dilation and, rarely, re-operation.
- Dumping Syndrome: Dumping Syndrome (symptoms of the dumping syndrome include cardiovascular problems with weakness, sweating, nausea, diarrhea and dizziness) can occur in some patients after Gastric Bypass.
- Bowel Obstruction: Any operation in the abdomen can leave scar tissue that can put the patient at risk for later bowel blockage.
- Laparoscopic Surgery: Risks Laparoscopic surgery uses punctures to enter the abdomen and can lead to injury, bleeding and death.
- Need for and Side Effects of Drugs: All drugs have inherent risks and in some cases can cause a wide variety of side effects including death.
- Loss of Bodily Function: Including stroke, heart attack, limb loss and other problems related to the operation and anesthesia.
- Risks of Transfusion: Including Hepatitis and Acquired Immune Deficiency Syndrome (AIDS), from the administration of blood and/or blood components.
- Hernia: Cuts in the abdominal wall can lead to hernias after surgery. Internal Hernia (twisting of the bowel) can occur after Gastric Bypass.
- Hair Loss: Many patients develop hair loss for a short period after the operation. This usually transient and responds to increased levels of vitamins.
- Vitamin and Mineral Deficiencies: After Gastric Bypass or the sleeve there can be malabsorption of many vitamins and minerals. Patients must take vitamin and mineral supplements forever to protect themselves from these problems.
- Ulcers: Patients undergoing Gastric Bypass may develop ulcers of the pouch, the bottom of the stomach or parts of the intestine. Ulcers may require medical or surgical treatment, and have complications of chronic pain, bleeding, and perforation.
- Other Major abdominal surgery, including Laparoscopic Gastric Bypass, is associated with a large variety of other risks and complications, both recognized and unrecognized that occur both soon after and long after the operation.
Follow-up After Bariatric Surgery

- Routine follow-up post-op 2 weeks, 6 weeks, 3 months, 6 months and 1 year
- Annual follow up with labs there after
- Address weight stalls/ plateaus sooner rather than later
- Patients that reach expected goal weights at 1-2 years generally have better long term outcomes
Annual Labs

- BMP
- Liver function panel
- CBC
- Iron and TIBC
- B₁₂
- B₁
- B₆
- Folate

- Lipid panel
- A₁c
- TSH
- Vit D
- Copper
- Selenium
- Vit A
- Pre-albumin
<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Guidelines</th>
<th>Rationale</th>
<th>Considerations</th>
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</thead>
<tbody>
<tr>
<td>Thiamine</td>
<td>High risk groups: - Females - Blacks/AA - Poor follow-up - Severe GI sx - small bowel bacterial overgrowth</td>
<td>Rates of deficiency ranging from $&lt;1$-$49%$</td>
<td>Risk increases with malnutrition, rapid weight loss and excessive ETOH use.</td>
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<td>B12</td>
<td>All SG, RNY and BPD pts More frequent with certain meds. Add MMA and homocysteine</td>
<td>At 3-5 years $&lt;20%$ in RNY and 4-$20%$ in SG</td>
<td>Consider food restriction/intolerances as additional cause</td>
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<tr>
<td>Folate/folic acid</td>
<td>All pts, esp females in child</td>
<td>Prevalence up to 65%</td>
<td>Low intake of folate rich foods and poor adherence to vitamins</td>
</tr>
<tr>
<td>Vitamin D &amp; calcium</td>
<td>Routine screening for all patients</td>
<td>B</td>
<td>Deficiency in up to 100% of pts at some point in follow-up</td>
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<td>Fat Soluble Vitamins (A, E, K)</td>
<td>Screen for Vit A def in first year, BPD/DS. Screen RNYGB and BPD pts if sx or malnutrition E and K def very uncommon</td>
<td>B</td>
<td>Prevalence of up to 70% in malabsorptive surgeries with in 4 years</td>
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<td>Zinc</td>
<td>Post RYGB and BPD/DS pts annually</td>
<td>Serum and plasma zinc for screening</td>
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<tr>
<td></td>
<td>Copper</td>
<td>Screen post RYGB and BPD/DS pts annually</td>
<td>C</td>
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Recommended Vitamin Regimen

- Multivitamin with iron
  - One twice daily
  - If iron is not included in the MVI, 18 mg daily to be taken separately
- B-complex
  - Once daily
  - Must contain at least 15mg thaimine

- Calcium with Vitamin D
  - 500 mg three times daily
- Vitamin B12
  - 500 mcg sublingual
  - 1000mcg sublingual every other day
  - 1000mcg IM
For a Lifetime

Special Medication Considerations
Ulcers

- NSAIDs are to be avoided for life
- Smoking increases risks
- Steroid use should be avoided or limited when possible
- Treatment with “triple therapy”
- EGD for definitive dx, to check margins and for healing
Absorption

- Time-release and enteric coated medications
- Anti-rejection medications
- Alcohol
Osteoporosis Medication

- Routine screening schedule unless other risks
- Oral bisphosphonates are not necessarily contraindicated
- Screen carefully for GERD/esophagitis sx and tolerance of PO meds
- Consider parenteral meds if treatment needed
Medications with Weight Positive Effects

- Anti-depressants
- Anti-seizure meds
- Sulfonyureas
- Thiazolidinediones
- Insulin
- Anti-psychotics

- Depo-provera
- Fertility treatments
- Chronic steroids
- Sleep medications
- Beta-blockers
Weight Regain

- Maintaining eating habits
- Maintaining activity level
- Screen for psych issues
- Negative life events
- Possible relationship to new medication
Weight Regain

- Re-connect with bariatric department
- Refer to dietician/nutritionist with bariatric expertise
- Counseling/CBT if needed
- Exercise program/PT referral
- Medical weight loss may be helpful
- Revision surgery rarely the solution
References

- NCHS Data Brief ■ No. 167 ■ October 2014