**Bariatric Case Study
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MNT II**

1. **Understanding the Diagnosis and Pathophysiology**

1. Discuss the classification of morbid obesity. A BMI of 40 or greater is considered morbid obesity. Morbid obesity is a serious health condition that can interfere with basic physical functions such as breathing or walking. Those who are morbidly obese are at greater risk for illnesses including diabetes, high blood pressure, sleep apnea, gastroesophageal reflux disease (GERD), gallstones, osteoarthritis, heart disease, and cancer.

2. Describe the primary health risks involved with untreated morbid obesity. What health risks does Mr. McKinley present with*?* Health risks that accompany morbid obesity are coronary heart disease, Type 2 Diabetes, cancers, hypertension, dyslipidemia, stroke, liver and gallbladder disease, sleep apnea and respiratory problems, osteoarthritis, reproductive disorders, blood clots, edema, and fat accumulation. Mr. M presents the following health risks: Type 2 Diabetes, HTN, hyperlipidemia, and osteoarthritis.

3. What are the standard adult criteria for consideration as a candidate for bariatric surgery? After reading Mr. McKinley’s medical record, determine the criteria that allow him to qualify for surgery*.* Standard criteria for the qualification of weight loss surgery are efforts to lose weight with diet and exercise are unsuccessful, a BMI of 40 or greater or lower (35) with comorbidities present, medical history, and current disease states. Mr. M is a candidate for bariatric surgery. He has a BMI of 59 and has tried other weight loss mechanisms that havenot helped.
4. By performing an Internet search or literature review, find one example of a bariatric surgery program. Describe the information that is provided for the patient regarding qualification for surgery. Outline the personnel involved in the evaluation and care of the patient in this particular program. ----Yale-Newhaven Hospital Bariatric Surgery Program: Offers three different weight-loss surgery options.
-Personnel: 3 World-Class surgeons, registered dietitians

-Accredited by the Bariatric Surgery Center Network

<http://www.ynhh.org/medical-services/default.aspx>

5. Describe the following surgical procedures used for bariatric surgery, including advantages,
 disadvantages, and potential complications.

a. Roux-en-Y gastric bypass*:* Roux-en-Y gastric bypass surgery makes the stomach smaller and causes food to bypass part of the small intestine and connects to the jejunum. The duodenum is still present, but it is bypassed. Advantage- On average, people lose more than half of their excess weight following Roux-en-Y surgery. Disadvantage- not reversible process, can cause dumping syndrome, patients can experience vitamin and mineral deficiencies because of poor absorption. Potential complications- infection in the incision, a leak from the stomach into the abdominal cavity or where the intestine is connected resulting in an infection called [peritonitis](http://www.webmd.com/hw-popup/peritonitis), [deep vein thrombosis](http://www.webmd.com/hw-popup/deep-vein-thrombosis), [pulmonary embolism](http://www.webmd.com/hw-popup/pulmonary-embolism). Some people develop [gallstones](http://www.webmd.com/hw-popup/gallstones-8024) or a nutritional deficiency condition such as [anemia](http://www.webmd.com/hw-popup/anemia) or [osteoporosis](http://www.webmd.com/hw-popup/osteoporosis-menopause)*.*

b. Vertical sleeve gastrostomy: A large portion of the stomach is removed. The new, smaller stomach is about the size of a banana. It limits the amount of food individuals can eat by making them feel full after eating small amounts of food. Advantages- doesn’t interfere with remainder of digestive tract, dumping syndrome avoided, surgery can help chronic disease states like asthma, type 2 diabetes, arthritis, high blood pressure, obstructive sleep apnea, high cholesterol, and gastroesophageal disease (GERD). Disadvantage- the surgery cannot be reversed after done, weight regain is common, without correct portion sizes and a nutritious diet, complications can arise. Potential complications-blood clots, blood loss, heart attack, stroke, or infection due to surgery. Others are gastritis, heartburn, leaking around staple areas, and vomiting.

 c. Adjustable gastric banding (Lap-Band): Adjustable gastric banding is done through several small incisions in the belly. A device is placed around the upper part of your stomach to form a ring. Attached to the ring is a thin tube leading to an access port that is left under the skin. The access port is the place where the doctor puts in a needle to add or take away saline. Adding saline tightens the band and makes the stomach smaller. The doctor can take away saline if the ring is too tight. Advantage- Surgery can be reversed and the band can be adjusted as needed, complications are less likely, recovery is shorter. Disadvantages-weight loss is slower than with other surgeries because no malabsorption, weight gain can be common, takes longer to reintroduce solid foods into diet. Potential complications- obstruction, band slippage, access port issues, GERD, and poor nutrition.
d. Vertical banded gastroplasty:  The upper stomach near the esophagus is stapled vertically to create a small pouch along the inner curve of the stomach. The outlet from the pouch to the rest of the stomach is restricted by a band made of special material. The band delays the emptying of food from the pouch, causing a feeling of fullness. Advantage- normal digestive process and absorption is not altered, can be reversed. Disadvantage- patients must eat considerably smaller portions, less weight loss. Potential complications- leakage along stapled area or breaking of stapes infection, nausea, vomiting, excess skin, and increased rate of emptying.
e. Duodenal switch: Often performed with biliopancreatic diversion. A large portion of the stomach is removed and food is rerouted away from the upper portion of the small intestine which cuts back on calories your body is able to absorb. Advantages- drastic, significant weight loss, because it restricts how much food you can eat and reduces how many calories you can absorb, less risk for dumping syndrome. Disadvantages- more complications, more dietary restrictions, surgery makes it difficult to properly absorb vitamins and minerals. Potential complications- reduces the absorption of essential vitamins and minerals and can result in serious and long-term complications, bleeding, infection, pneumonia, osteoporosis, development of protein-calorie malnutrition, internal bleeding, infection, and clots.

f. Biliopancreatic diversion: Rare surgery *--* Large portion of stomach is removed and food is rerouted to bypass a portion of small intestine. Preformed with duodenal switch. Used on patients with BMI of 50 or greater. Advantage- less calories are able to be absorbed, greatest amount of weight reduction. Disadvantages- vitamin and mineral deficiencies. Potential complications- dumping syndrome, increased risk of osteoporosis, and poor nutrition.

6. Mr. McKinley has had type 2 diabetes for several years. His physician shared with him that after surgery he will not be on any medications for his diabetes and that he may be able to stop his medications for diabetes altogether. Describe the proposed effect of bariatric surgery on the pathophysiology of type 2 diabetes. What, if any, other medical conditions might be affected by weight loss? Type 2 Diabetes, hypertension, hyperlipidemia, and sleep apnea could potentially be improved through weight loss. A better diet will improve glucose control and cells will become more sensitive.

1. **Understanding the Nutrition Therapy**

7. On post-op day one, Mr. McKinley was advanced to the Stage 1 Bariatric Surgery Diet. This consists of sugar-free clear liquids, broth, and sugar-free Jell-O. Why are sugar-free foods used? . Generally, sugar and sugary foods/drinks can cause dumping syndrome, which needs to be avoided post-surgery. Also, sugar-free foods are used to maintain blood glucose levels after surgery. Since the foods will be absorbed differently and may have a different route in the GI tract, it is important to keep blood glucose levels in normal ranges

8. Over the next two months, Mr. McKinley will be progressed to a pureed consistency diet with 6-8 small meals. Describe the major goals of this diet for Roux-en-Y patient. How might the nutrition guidelines differ if Mr. McKinley had undergone a Lap-Band procedure? Mr. M needs small meals because of this lack of stomach and to achieve maximum absorption. If he would have had a lap-band procedure he would still have to restrict amount of food he takes in, but his absorption would be better. Also, he may not have to worry about supplements as much with a lap-band procedure.

9. Mr. McKinley’s RD has discussed the importance of hydration, protein intake, and intakes of vitamins and minerals, especially calcium, iron, and B12. For each of these nutrients, describe why intake may be inadequate and explain the potential complications that could result from deficiency.

Overall, Mr. M is eating less and experiencing malabsorption of all vitamins and minerals.
*Calcium*—there is a reduction in gastric acidity which is required for absorption of calcium. This puts him at risk for osteoporosis.
*Iron* – Duodenum is there area where absorption of iron occurs and also needs requires an acidic environment for absorption. This iron deficiency could lead to anemia.
*B12* – this b-vitamin requires intrinsic factor for proper absorption, which is combined with B12 in stomach. Since we are bypassing a large portion of stomach, vitamin B12 isn’t being absorbed properly. This deficiency can lead to anemia.
*Protein* – because of a limited intake of protein and total calories, this deficiency can lead to anemia and other micronutrient stores expended.
*Hydration* – it is important to take in liquids between meals to minimize dumping syndrome, and adequate fluid needs are necessary to prevent dehydration.

1. **Nutrition Assessment**

10. Assess Mr. McKinley’s height and weight. Calculate his BMI and % usual body weight. What would be a reasonable weight goal for Mr. McKinley? Give your rationale for the method you used to determine this. BMI: 59 and %UBW: 94%. Weight goal: lose 30-35% of body weight after approximately 2 years. A goal would be to lose 123-143 pound and be at a weight of 267- 287. Also, we want Mr. M’s BMI below 30 to decrease his comorbidity risk.

11. After reading the physician’s history and physical, identify any signs or symptoms that are most likely a consequence of Mr. McKinley’s morbid obesity? Blood pressure, knee replacement, skin rash, edema, and an elevated respiration rate are all consequences of Mr. M’s morbid obesity issue.

12. Identify any abnormal biochemical indices and discuss the probable underlying etiology. How might they change after weight loss? Mr. M’s cholesterol, HDL, LDL, glucose and A1C lab values are all abnormal. His potassium and CPK levels are also high from inflammation post-surgery. With weight loss his abnormal lab values will improve.

13. Determine Mr. McKinley’s energy and protein requirements to promote weight loss. Explain the rationale for the method you used to calculate these requirements. Mifflin

Energy needs: 3349 kcals according to Mifflin, but this intake is significantly high. Using Mr. M’s IBW, his needs are 1500-1900 kcals.
Protein needs: Mr. M needs excess protein for healing – needs approximately 1-1.2 g protein/kg. Using his IBW, Mr. M needs approximately 75-90 g of protein per day.

1. **Nutrition Diagnosis**14. Identify at least two pertinent nutrition problems and the corresponding nutrition diagnoses. -- Inadequate vitamin (B12) intake related to decreased absorption as evidenced by reports of adequate vitamin B12 sources in diet with low serum levels.

-Obesity related to excessive energy intake as evidenced by BMI of 59.

1. **Nutrition Intervention**15. Determine the appropriate progression of Mr. McKinley’s post-bariatric-surgery diet. Include recommendations for any supplementation that you would advise. Start on sugar free liquid diet including broth, Jell-O, sprite, and tea. Mr. M should advance to full liquid diet including boost and ensure. Next, Mr. M should advance to pureed diet to help food pass through easy. Last he should advance to a soft food diets. He needs to avoid sweets, and lastly advance to regular diet. Mr. M should consume low fat milk and water between meals. The pt needs to slowly progress on his diets to prevent dumping syndrome. Small frequent meals are necessary and he should be advised to start supplementation of the vitamins and minerals he is lacking.

16. Describe any pertinent lifestyle changes that you would view as a priority for Mr. McKinley. -change in diet: no sweets, small frequent meals, listen to body signals that indicate fullness

-increase activity level in daily routine to help with weight loss
-frequent monitoring by RD and MD to assess nutrition status

17. How would you asses Mr. McKinley’s readiness for a physical activity plan? How does exercise assist in weight loss after bariatric surgery? He needs to start his exercise slow for example, walking or stationary biking. Mr. M needs to be willing and ready to exercise and experiment with what he is willing to try. Exercise goals need to be established, and the doctor needs to be involved.

1. **Nutrition Monitoring and Evaluation**18. Identify the steps you would take to monitor Mr. McKinley’s nutritional status postoperatively.

**-**monitor weight changes

**-**monitor food intake: tolerances and sugar intake
-liquid intakes
-assess and reevaluate protein and energy needs

**-**monitor vitamin and mineral deficiencies

**-**monitor comorbidities: will mostly concern the doctor, but RD needs be aware

19. From the literature, what is the success rate of bariatric surgery? What patient characteristics may increase the likelihood for success? Most weight-loss patients lose 30-35% of body weight in two years. Maintenance: about 60% are successful in maintaining weight loss. Having a good support group and support at home, a good adherence he has to the diet, willingness to exercise, and weight loss prior to surgery is helpful.

20. Mr. McKinley asks you about the possibility of bariatric surgery for a young cousin who is 10 years old. What are the criteria for bariatric surgery in children and adolescents? The child would have to be of severe weight, experience failure to reach weight loss goals for more than 6 months, be severely obese with BMI of bigger than 50, comorbidities. The child would need to have achieved skeletal maturity (started puberty). The child would need to be willing to follow nutrition guideline. A psych evaluation would need to be completed.

21. Write an ADIME note for your inpatient nutrition assessment with initial education for the Stage 1 (liquid) diet for Mr. McKinley.

**A**: 37 year old white male coming in for bariatric surgery. Current weight 410#, height 5’10”. BMI of 59. Pt has experienced lifelong obesity. Current medications: Metformin, Lantus, Lasix, Lovastatin. His abnormal lab values are HDL, LDL, triglycerides, cholesterol, and blood glucose levels. Presence of rash under abdominal skin folds. Pt has tried other weight loss techniques and not been successful. Pt has had right knee replacement. Family history of CAD, T2DM, HTN, and osteoporosis.

**D**: Current diagnoses are type 2 diabetes, hypertension, osteoarthritis, hyperlipidemia, and osteoarthritis.

**I**: Establish diet, weight loss and exercise goals. Diet: follow assigned diet and advance when necessary. Weight loss: progressive weight loss through nutritious diet and increase in activity level. Exercise: increase physical activity level in daily routine to promote weight loss.

**M**: Establish follow up appointment. Monitor weight loss rate and weight loss percentage. Pt needs to self-weigh weekly. The lipid profile needs to be monitored. Need to follow up on hemoglobin and A1C levels. .

**E:** Allow pt to explain any current discomfort, pain, or concerns he has about weight-loss surgery.