Surgical Treatment of Obesity: What the Family Physician Should Know

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No Disclosures

Learning Objectives

• Review morbidity, mortality and cost data for obesity and for bariatric surgery (is it safe and does it work?)
• Discuss who should be referred and when (and some potential barriers)
• Describe currently available surgical treatments
• Discuss expected weight loss and resolution of comorbidities
• Discuss early and late complications
• Recommendations for the primary care provider
Only 2% of patients who are eligible for bariatric surgery are ever referred.

Why?

Is It Safe and Does it Work?
Quick Review: Current Morbidity, Mortality and Cost Data for Morbid Obesity

• Obese individuals have a 10-50% increased risk of death compared to individuals of a healthy weight

• Obese individuals spend 40% more on health care than individuals of normal weight

• Risk of death from bariatric surgery is about 0.1%, major complications 2%

• **Risks of living with morbid obesity outweigh the risks of bariatric surgery**

• Average cost for laparoscopic Roux-en-Y gastric bypass $25-$35,000

• “Pays for itself” in 2-4 years time (insurance costs)

Source: ASMBS
Quick Review: Long-Term Effectiveness of Bariatric Surgery

• Maximum weight loss 1-2 years after surgery; maintained at 60% excess body weight lost (EBWL) > 5 yrs

• Patients may lose 30 to 50% of excess weight 6 months after surgery and 77% of excess weight as early as 12 months after surgery

• Gastric bypass resolves or improves Type 2 diabetes in nearly 90% of patients

• Cuts risk of developing coronary heart disease in half

• Resolves obstructive sleep apnea in more than 85% of patients

• Patients may improve life expectancy by 89% and decrease risk of premature death by 30 - 40%

Source: ASMBS

- Observational study of morbidly obese patients *without* associated medical conditions.

- Followed matched surgical and non-surgical groups for 5 years to compare incidence of new medical conditions, hospitalizations, LOS and physician visits, and mortality in each cohort.

- Significant relative risk reduction in incidence of disease seen for 10/12 organ systems in surgery group

- 89% relative risk reduction in mortality in the surgery group

- 50% more hospitalizations and 45% higher direct health care costs in non-surgery group
Resolution of Co-Morbidities After Bariatric Surgery: Diabetes, Hypertension and Sleep Apnea

- Buchwald et al. JAMA 2004 “Bariatric surgery: a systematic review and meta-analysis”

- Diabetes completely resolved: 76.8%; Resolved or improved 86.0%.

- Hyperlipidemia improved: >70%

- Hypertension resolved: 61.7%; Resolved or improved: 78.5%.

- OSA resolved 85.7%; Resolved or improved: 83.6%
Performing weight-loss surgery on obese patients with type 2 diabetes effectively reversed the disease, allowing most of them to stop using insulin and many to require no medication to treat the condition three years later, researchers reported Monday.
Resolution of Co-Morbidities After Bariatric Surgery: Type II Diabetes and Cardiovascular Risk Factors

- Schauer et al. NEJM 2012 “Bariatric Surgery vs. Intensive Medical Therapy in Obese Patients with Diabetes

- 150 pts with uncontrolled DMII randomized to surgery vs. intensive medical tx

- Intensive medical tx: lifestyle counseling, wt mgmt, hypoglcemic agents and anti-hypertensives to achieve SBP< 130mm Hg, DBP < 80 mm Hg, LDL < 100 mg dL

- 12 month primary endpoint of HbA1c < 6% achieved in 42% of gastric bypass and 12% of intensive medical therapy group

- Secondary endpoints of improvement in HDL and triglycerides, body weight/BMI and number of hypoglycemic, lipid-lowering and anti-hypertensive medications all significantly decreased in surgery group
Table 1
Weight and body-mass index before and 5 years after gastric bypass

<table>
<thead>
<tr>
<th></th>
<th>All patients N = 184</th>
<th>Preoperative BMI &lt;50 kg/m², N = 126</th>
<th>Preoperative BMI ≥50 kg/m², N = 58</th>
<th>Between-group change</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline 5 yr</td>
<td>Baseline 5 yr Δ*</td>
<td>Baseline 5 yr Δ*</td>
<td>Δ* (95% CI) P</td>
</tr>
<tr>
<td>Weight (kg)</td>
<td>137 ± 22 100 ± 22‡</td>
<td>130 ± 19 97 ± 20 −33 ± 14</td>
<td>153 ± 20 108 ± 25 −45 ± 17</td>
<td>−12.4 (−17.1 to −7.8) .001</td>
</tr>
<tr>
<td>BMI (kg/m²)</td>
<td>46 ± 5 34 ± 6‡</td>
<td>44 ± 3 33 ± 5 −11 ± 5</td>
<td>52 ± 2 37 ± 7 −15 ± 6</td>
<td>−4.5 (−6.1 to −2.9) &lt;.001</td>
</tr>
<tr>
<td>% weight loss</td>
<td>27 ± 11</td>
<td>26 ± 10</td>
<td>30 ± 11</td>
<td>4.5 (1.2 to 7.8) .008</td>
</tr>
<tr>
<td>%EWL</td>
<td>59 ± 23</td>
<td>60 ± 24</td>
<td>58 ± 23</td>
<td>−2.2 (−9.5 to 5.2) n.s.</td>
</tr>
<tr>
<td>%EBMIL</td>
<td>58 ± 24</td>
<td>59 ± 24</td>
<td>57 ± 24</td>
<td>−2.3 (−9.8 to 5.2) n.s.</td>
</tr>
<tr>
<td>EWL &gt;50%, N (%)</td>
<td>113 (62)</td>
<td>78 (62)</td>
<td>35 (60)</td>
<td>n.s.</td>
</tr>
<tr>
<td>Weight regain (kg)§</td>
<td>8 ± 11</td>
<td>8 ± 9</td>
<td>8 ± 13</td>
<td>−.5 (−4.0 to 3.1) n.s.</td>
</tr>
</tbody>
</table>

BMI = body mass index; CI = confidence interval; %EBMIL = percent excess BMI loss; %EWL = percent of excess weight loss; N = number of patients;

Table 2
Obesity-related co-morbidities and presence of the metabolic syndrome according to The International Federation of Diabetes before and 5 years after gastric bypass

<table>
<thead>
<tr>
<th></th>
<th>All patients, N, %</th>
<th>Preoperative BMI &lt;50 kg/m², N, %</th>
<th>Preoperative BMI ≥50 kg/m², N, %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Baseline 5 yr P</td>
<td>Baseline 5 yr P</td>
<td>Baseline 5 year P</td>
</tr>
<tr>
<td>Hypertension</td>
<td>124/176 (70)</td>
<td>84/124 (68)</td>
<td>40/52 (77)</td>
</tr>
<tr>
<td>Hypothyreosis</td>
<td>34/184 (18)</td>
<td>27/126 (21)</td>
<td>14/52 (27)</td>
</tr>
<tr>
<td>Type 2 diabetes</td>
<td>49/165 (30)</td>
<td>35/113 (31)</td>
<td>14/52 (27)</td>
</tr>
<tr>
<td>Sleep apnea</td>
<td>37/184 (20)</td>
<td>23/126 (18)</td>
<td>10/58 (17)</td>
</tr>
<tr>
<td>Dyslipidemia</td>
<td>157/175 (90)</td>
<td>110/120 (92)</td>
<td>47/55 (85)</td>
</tr>
<tr>
<td>Gastroesophageal reflux</td>
<td>26/184 (14)</td>
<td>18/126 (14)</td>
<td>8/58 (14)</td>
</tr>
<tr>
<td>Metabolic syndrome</td>
<td>112/158 (71)</td>
<td>77/109 (71)</td>
<td>35/49 (71)</td>
</tr>
</tbody>
</table>
Fig. 2. SF-36 scores in 177 patients 5 years after gastric bypass and in 288 patients awaiting gastric bypass. The differences in mean score between the 2 groups were statistically significant for all domains ($P < .01$). BP = bodily pain; GH = general health; MH = mental health; PF = physical functioning; RE = role emotional; RP = role physical; SF = social functioning; VT = vitality.
A PATIENT STORY USING A RISK ASSESSMENT CALCULATOR
Questions 1 to 5

Click the “?” buttons or underlined links for more information about each question.

With a little optimism and determination, you can manage type 2 diabetes and live a full life.

<table>
<thead>
<tr>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GENDER</td>
</tr>
<tr>
<td>What is your gender?</td>
</tr>
<tr>
<td>2. AGE</td>
</tr>
<tr>
<td>What is your age?</td>
</tr>
<tr>
<td>3. HEIGHT</td>
</tr>
<tr>
<td>What is your height?</td>
</tr>
<tr>
<td>4. EXISTING CONDITIONS</td>
</tr>
<tr>
<td>Do you have any of these existing conditions?</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Click here for definitions of these existing conditions.</td>
</tr>
<tr>
<td>5. DIABETES DIAGNOSIS</td>
</tr>
<tr>
<td>How old were you when your diabetes was diagnosed?</td>
</tr>
</tbody>
</table>
Questions 6 to 9

Click the "?" buttons or underlined links for more information about each question.

Don’t let diabetes control your life. Adopting a healthier lifestyle can help you take charge of the disease.

6. SMOKING

Do you smoke? No

Answer "Yes" if you have smoked any tobacco within 30 days.

7. PHYSICAL ACTIVITY

What is your level of physical activity for most days of the week?

Definition of physical activity.

8. WEIGHT

What is your weight? 322

Enter a number between 70 and 400 into the box.

9. BLOOD SUGAR LEVEL

What is your blood sugar (HbA1c) level?

Don’t know?
### Questions 10 to 13

Click the “?” buttons or underlined links for more information about each question.

#### 10. SYSTOLIC BLOOD PRESSURE

**What is your systolic blood pressure?**

- **164** mm Hg

- **Don’t know?** 90

#### 11. DIASTOLIC BLOOD PRESSURE

**What is your diastolic blood pressure?**

- **94** mm Hg

- **Don’t know?** 60

#### 12. TOTAL CHOLESTEROL

**What is your total cholesterol?**

- **311** mg/dL

- **Don’t know?** 40

#### 13. HDL CHOLESTEROL

**What is your HDL (good) cholesterol?**

- **25** mg/dL

- **Don’t know?** 20

---

*By learning to carefully monitor and keep track of your numbers, you can better manage type 2 diabetes.*
**Pt DD: Pre-Operative Heart Attack and Stroke Risk**

Compare the columns below. Click the button to reveal your risk estimates.

<table>
<thead>
<tr>
<th></th>
<th>CURRENT</th>
<th>RECOMMENDED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Sugar</strong></td>
<td><strong>12.0%</strong></td>
<td><strong>6.9%</strong></td>
</tr>
<tr>
<td>(HbA1c)</td>
<td>very high risk</td>
<td>(less than 7)</td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td><strong>164 mm Hg</strong></td>
<td><strong>129 mm Hg</strong></td>
</tr>
<tr>
<td>(systolic)</td>
<td>very high risk</td>
<td>(less than 130)</td>
</tr>
<tr>
<td><strong>Total Cholesterol</strong></td>
<td><strong>311 mg/dL</strong></td>
<td><strong>199 mg/dL</strong></td>
</tr>
<tr>
<td></td>
<td>very high risk</td>
<td>(less than 200)</td>
</tr>
<tr>
<td><strong>HDL (&quot;Good&quot;) Cholesterol</strong></td>
<td><strong>25 mg/dL</strong></td>
<td><strong>40 mg/dL</strong></td>
</tr>
<tr>
<td></td>
<td>high risk</td>
<td>(40 or higher)</td>
</tr>
</tbody>
</table>

These risk factors have a big impact on your chances of having a heart attack or stroke:
- Blood Sugar
- Blood Pressure
- Cholesterol

It is important to try to control these risk factors.

View the recommended levels in the second column.

**10-YEAR ESTIMATE**

<table>
<thead>
<tr>
<th></th>
<th>HEART ATTACK</th>
<th>STROKE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heart Attack</strong></td>
<td><strong>70%</strong></td>
<td><strong>6%</strong></td>
</tr>
<tr>
<td><strong>Stroke</strong></td>
<td><strong>4%</strong></td>
<td><strong>0%</strong></td>
</tr>
</tbody>
</table>

Compare your estimated risk with recommended levels.

Being at the recommended levels may substantially reduce your risk.

Continue with the assessment to learn how to reach your goals.
### Pt DD: 9 Months Post-Operative Heart Attack and Stroke Risk

Compare the columns below. Click the button to reveal your risk estimates.

<table>
<thead>
<tr>
<th></th>
<th>CURRENT</th>
<th>RECOMMENDED</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Blood Sugar</strong></td>
<td>6.7% low risk</td>
<td>6.7% (less than 7)</td>
</tr>
<tr>
<td>(HbA1c)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Blood Pressure</strong></td>
<td>145 mm Hg high risk</td>
<td>129 mm Hg (less than 130)</td>
</tr>
<tr>
<td>(systolic)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Cholesterol</strong></td>
<td>177 mg/dL low risk</td>
<td>177 mg/dL (less than 200)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HDL (&quot;Good&quot;) Cholesterol</strong></td>
<td>36 mg/dL high risk</td>
<td>40 mg/dL (40 or higher)</td>
</tr>
</tbody>
</table>

These risk factors have a big impact on your chances of having a heart attack or stroke:
- Blood Sugar
- Blood Pressure
- Cholesterol

**It is important to try to control these risk factors.**

View the recommended levels in the second column.

### Compare your estimated risk with recommended levels

Being at the recommended levels may substantially reduce your risk.

Continue with the assessment to learn how to reach your goals.
Resolution of Diabetes after Bariatric Surgery: My patient JN

JN: Medications Pre-Surgery; BMI 46

- **Asthma:**
  - Albuterol, fluticasone-salmeterol, montelukast

- **Hypertension:**
  - **Furosemide**, carvedilol, lisinopril (Indications: Diabetic Nephropathy, Hypertension)

- **Diabetes**
  - Glimepiride 4mg, metformin 2000mg/day, insulin glargine (LANTUS) 40 units/day, insulin lispro (HUMALOG) 18 units/day

- **Other:** Omeprazole, sumatriptan, calcium carbonate-vitamin D, citalopram

JN: Medications 6 mos post-op; BMI 32

- **Asthma:**
  - Albuterol, fluticasone-salmeterol, montelukast Rom air walking desat greatly improved

- **Hypertension:**
  - Carvedilol, lisinopril (Indications: Diabetic Nephropathy, Hypertension)

- **Diabetes:** No medications since surgery. HbA1c 6.4 to 5.8, BMI 46 to 32

- **Other:** Omeprazole, sumatriptan, calcium carbonate-vitamin D, citalopram, B-12, B-complex, iron
Another Patient

Before BMI 37

After BMI 25

Pre-op Hgb A1c 7.8%
on medication for diabetes, hypertension and hyperlipidemia

Triglycerides 2112

1 year post/op Hgb A1c=5.7%

Trig= 118

Off all medications
Barriers to Surgical Referral

- Old information about safety and efficacy?
- Continued bias/blame about calories in=calories out?
- Stigmatization of failure-yours and your patient’s?
- Things I hear: “My doctor didn’t want me to have the surgery”, “My doctor never even brought up my weight”
- We’re on the verge of a (medical, diet, public health) breakthrough???
Fig. 2. Respondent-perceived bariatric surgery and total other therapies prescribed versus 2-year outcomes.
Patients are being denied access to the single most effective treatment for obesity and obesity related disease

- Do I wish we had a non-surgical method that worked just as well?

- Of course!

- Are we going to find it in your patient’s lifetime?

- A multidisciplinary approach includes surgery at this point in history
Referring the Right Patient at the Right Time

• How long do you wait before telling patients this is an option?

• The patients I see have been battling their weight for 10, 20, 30 years and more. How about your patients?

• They are riddled with guilt, shame, frustration, desperation and see resorting to surgery as a culmination of a lifetime of failure

• Lifelong flogging…is it healthy?
“You didn’t fail. We have failed you.”

American Adults On a Diet

Historical Value of the Diet Market

Source: Calorie Control Council, National Consumer Surveys
Obesity Trends* Among U.S. Adults

BRFSS, 2003

(*BMI ≥30, or ~30 lbs. overweight for 5’ 4” person)

Source: Behavioral Risk Factor Surveillance System, CDC.
Prevalence* of Self-Reported Obesity Among U.S. Adults
BRFSS, 2012

*Prevalence reflects BRFSS methodological changes in 2011, and these estimates should not be compared to those before 2011.
Treatment Algorithm*

1. **Patient Encounter**
2. **Hx of ≥ 2s BMI?**
   - No
   - Yes
3. **BMI measured in past 2 years?**
   - No
   - Yes
4. Measure weight, height, and waist circumference
   - Calculate BMI
5. **BMI ≥ 25 OR waist circumference > 80 cm (F) OR ≥ 102 cm (M)**
   - No
   - Yes
6. **Assess risk factors**
7. **BMI ≥ 30 OR [BMI ≥ 25 OR waist circumference > 80 cm (F) OR > 102 cm (M)] AND ≥ 2 risk factors**
   - No
   - Yes
8. **Clinician and patient devise goals and treatment strategy for weight loss and risk factor control**
9. **Progress being made/goal achieved?**
   - Yes
   - No
10. **Assess reasons for failure to lose weight**
11. **Maintenance counseling:**
    - Dietary therapy
    - Behavior therapy
    - Physical activity
12. **Does patient want to lose weight?**
    - Yes
    - No
13. **Advise to maintain weight/management of other risk factors**
14. **Hx BMI ≥ 25?**
    - No
    - Yes
15. **Brief reinforcement/educate on weight management**
16. **Periodic Weight Check**

* This algorithm applies only to the assessment for overweight and obesity and subsequent decisions based on that assessment. It does not include any initial overall assessment for cardiovascular risk factors or diseases that are indicated.
Refer for surgical consultation

My Addition

6 mos?

Refer for surgical consultation

11

Maintenance counseling:
- Dietary therapy
- Behavior therapy
- Physical activity

10

Assess reasons for failure to lose weight

12

Does patient want to lose weight?

No

Yes

7

BMI ≥ 30 OR
[[BMI 25 to 29.9
OR waist circumference > 88
cm (F) > 102 cm (M)]
AND ≥ 2 risk factors]

8

Clinician and patient
devise goals and
strategies for weight loss and risk factor control

9

Progress being made/goal achieved?

No

Yes

10

Assess reasons for failure to lose weight
BMI: It’s a number, not a judgment.

The 5 A’s of Obesity Management
from the Canadian Obesity Network

• **Ask** for permission to discuss weight and explore readiness for change

• **Assess** obesity related health risk and potential “root causes” of weight gain

• **Advise** on obesity risks, discuss benefits treatment options

• **Agree** on realistic weight-loss expectations and on a SMART plan to achieve behavioral goals

• **Assist** in addressing drivers and barriers, offer education and resources, refer to provider, and arrange follow-up
Who Should be Referred and When?

- Dixon: “Referral for a Bariatric Surgical Consultation: It is Time to Set a Standard of Care” *Obes Surg* 2009

- “*risk* is a continuous concept based[on much more than BMI]”

- Referral should occur following: “A finite period (e.g., 6 months?) of unsuccessful combined non-surgical therapies”

- Notes that psychologic comorbidities are highly under-investigated and patients who suffer from them are significantly under-referred.

- Categorizes “Weight-loss responsive comorbidities” (RR>5: DMII, HLD, OSA, IIH, Nonalcoholic steatohepatitis) to determine whether surgery may be indicated or is indicated. Terms obesity as a “serious chronic relapsing condition”
Who and When?

• Proposes graded levels of indications for bariatric surgery:

• Suggests initial evaluation from comorbidity standpoint:
  – What is the strength of the relationship between the comorbidity and obesity?
  – How serious is the comorbidity?
  – What is the effectiveness of weight loss (or hormonal axis changes) for the comorbidity?
  – How effective is current therapy for the patient’s condition?
Surgery may be indicated - Surgery is an option

"Surgery should be discussed"

Surgery is indicated - Should be advised as standard of care for the patient's condition

"Surgical referral recommended"

Table 2 The author’s proposed criteria for the two categories: the patient is eligible for surgery as an option or a surgical referral is appropriate and indicated as best care

<table>
<thead>
<tr>
<th>The patient is eligible for surgery</th>
<th>Surgery referral is indicated</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Surgery should be discussed as an option&quot;</td>
<td>&quot;Surgical referral recommended&quot;</td>
</tr>
<tr>
<td>BMI&gt;40 and &lt;50</td>
<td>BMI&gt;50</td>
</tr>
<tr>
<td>BMI&gt;35 and &lt;40 with a range of lesser problems related to obesity</td>
<td>BMI&gt;40 with serious weight loss- responsive comorbidity*</td>
</tr>
<tr>
<td>BMI&gt;30 and &lt;35 with serious weight loss- responsive comorbidity*</td>
<td></td>
</tr>
</tbody>
</table>

*Serious weight loss responsive comorbidity could include: Type-2 diabetes, obesity hypoventilation syndrome, severe obstructive sleep apnea, obesity-related raised intracranial pressure, and non-alcoholic steatohepatitis with substantial fibrosis.
Who and When?

Obesity

Too sick for surgery?

Surgical Referral?
NIH Recommendations

(1) patients seeking therapy for severe obesity for the first time should be considered for treatment in a nonsurgical program with integrated components of a dietary regimen, appropriate exercise, and behavioral modification and support,

(2) gastric restrictive or bypass procedures could be considered for well-informed and motivated patients with acceptable operative risks,

(3) patients who are candidates for surgical procedures should be selected carefully after evaluation by a multidisciplinary team with medical, surgical, psychiatric, and nutritional expertise,

(4) the operation be performed by a surgeon substantially experienced with the appropriate procedures and working in a clinical setting with adequate support for all aspects of management and assessment

(5) lifelong medical surveillance after surgical therapy is a necessity.
### TABLE IV-2:

**Classification of Overweight and Obesity by BMI, Waist Circumference and Associated Disease Risk**

<table>
<thead>
<tr>
<th>BMI (kg/m²)</th>
<th>Obesity Class</th>
<th>Disease Risk* Relative to Normal Weight and Waist Circumference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>—</td>
</tr>
<tr>
<td>Normal¹</td>
<td>18.5 – 24.9</td>
<td>—</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0 – 29.9</td>
<td>Increased</td>
</tr>
<tr>
<td>Obesity</td>
<td>30.0 – 34.9</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>35.0 – 39.9</td>
<td>Very High</td>
</tr>
<tr>
<td>Extreme Obesity</td>
<td>≥40</td>
<td>III Extremely High</td>
</tr>
</tbody>
</table>

* Disease risk for type 2 diabetes, hypertension, and CVD.
+ Increased waist circumference can also be a marker for increased risk even in persons of normal weight.

Box 1: The Edmonton obesity staging system

0  No apparent risk factors (e.g., blood pressure, serum lipid and fasting glucose levels within normal range), physical symptoms, psychopathology, functional limitations and/or impairment of well-being related to obesity

1  Presence of obesity-related subclinical risk factors (e.g., borderline hypertension, impaired fasting glucose levels, elevated levels of liver enzymes), mild physical symptoms (e.g. dyspnea on moderate exertion, occasional aches and pains, fatigue), mild psychopathology, mild functional limitations and/or mild impairment of well-being

2  Presence of established obesity-related chronic disease (e.g., hypertension, type 2 diabetes, sleep apnea, osteoarthritis), moderate limitations in activities of daily living and/or well-being

3  Established end-organ damage such as myocardial infarction, heart failure, stroke, significant psychopathology, significant functional limitations and/or impairment of well-being

4  Severe (potentially end-stage) disabilities from obesity-related chronic diseases, severe disabling psychopathology, severe functional limitations and/or severe impairment of well-being

When?
Figure 1: Comparison of staging system and anthropometric classification scheme for predicting all-cause mortality among people with overweight and obesity. BMI = body mass index, EOSS = Edmonton obesity staging system, NHANES = National Health and Human Nutrition Examination Surveys.
WEIGHT LOSS OPERATIONS: ANATOMY, OUTCOMES AND COMPLICATIONS
Laparoscopic Roux-en-Y Gastric Bypass

- Gold-standard
- Excellent long-term weight loss and resolution of comorbidities including remission of diabetes in majority of patients
- Complication rates are LOW
- Data >30 yrs available
Laparoscopic Sleeve Gastrectomy

- Numbers growing quickly
- Metabolic component, good diabetes resolution
- Similar complication rates to LRYGB; leak can be catastrophic
- Long-term data not available yet (6yr)
Laparoscopic Adjustable Gastric Banding

- Falling out of favor (we no longer put them in)
- Sleeve gastrectomy largely replacing
- Approved for BMI≥30
- High failure rate
Vertical Banded Gastroplasty, Duodenal Switch, Jejunoileal Bypass
Managing Complications

**Early (30-day, mostly surgeon)**

- Anastomotic or staple line leak
- Hemorrhage
- Marginal Ulcer
- PE/MI
- Infection
- Dehydration #1 cause of 30-day readmission

**Late (Lifetime, Multi-disciplinary)**

- Bowel Obstruction
- Ulcer/Stenosis
- Abdominal pain/ GI complaints
- Malabsorption/ Malnutrition
- Failure of weight loss
Intestinal Obstruction

• RYGB, VBG, other bypass

• Internal hernia, adhesions, anastomotic problems: 0.1-9% (no higher than other abdominal operations)

• Key points:
  – Presents with severe sudden abdominal pain
  – Vomiting is NOT likely to be present
  – Order imaging (CT scan) immediately
  – Conservative management does not work: surgical emergency
Roux Limb Obstruction
Marginal Ulcer and Stricture

- Pain, dysphagia, nausea, vomiting
- 3-5%
- Endoscopy vs empiric tx
- Check *h. pylori*

- Tobacco and NSAID’s are forbidden for life with few exceptions (ASA, steroid bursts) and are almost always involved. Check nicotine levels
- High dose PPI, carafate +/- triple therapy if indicated
- Repeat endoscopy if unimproved
- Can cause GJ stricture, similar presentation, may need surgery
Abdominal Pain and GI Complaints

- Dumping Syndrome
- Diet non-compliance
- Food intolerances
- SIBO
- Gallstones (13-16%)
- Kidney stones
- Intermittent Obstruction
Malabsorption/ Malnutrition

- Most common after bypass procedures
- Iron, vitamin B12 and calcium most frequently seen deficiencies
- Rates 10-15%
- Vitamin D deficiency with metabolic bone disease remains common after gastric bypass so calcium and vitamin D levels should be monitored and replaced
Monitoring and Supplements

- Patients should be seen at 1, 3, 6, 12 months and annually thereafter
- Screening labs each visit
- Supplements adjusted periodically
- Need for IM/IV supplementation rare for modern bypass patients
Monitoring and Supplements

**Lap Roux-en Y Gastric Bypass (LRYGB) – Supplement Guidelines**

- **chewable** multivitamin complete, two (2) times daily
- iron tablet daily [iron 65mg] or [ferrous sulfate 325mg]
- chewable or Gelcaps calcium plus vitamin D three (3) times daily
- vitamin B12 (500 mcg) daily
- B-Complex vitamin daily
- 1000 IU Vitamin D daily

Most patients after year 1 take MVI and calcium only
Monitoring and Supplements

Lap. SLEEVE Gastrectomy (LSG) - Supplement Guidelines

- 1 chewable multivitamin complete each day.
- 1 B12 daily
- 1000 IU Vitamin D daily
1, 3, 6 Month Screening Labs

- Hgb
- B12
- Prealbumin
- Albumin
- Lipid panel
- Vitamin D
- Glucose – if indicated
- Hgb A1C - if indicated
Annual Screening Labs

- Calcium
- Ferritin
- Folate
- Glucose
- Hemoglobin
- Hemoglobin A1c
- Lipid Panel
- LFT’s
- PTH
- Prealbumin
- Vitamin B1
- Vitamin B12
- Vitamin D 25-hydroxy
Follow-Up

• Short and Long-Term considerations
  – Pregnancy and infertility
  – Medications (diabetes and hypertension)
  – Lifestyle health
  – Smoking
  – Weight check
Managing Weight Regain

- Multidisciplinary, back to the drawing board
- Review behavior
- Rule out an anatomic problem (imaging)
- Revisional Surgery
SHOULD I CONSIDER WEIGHT LOSS SURGERY?

A GUIDE FOR PATIENTS

- Medical (non-operative) attempts at weight loss result in an average weight loss of only 6% at 10 years.

- Gastric bypass produces excess weight loss of up to 77% at 12 months and 60% at 5 years.

- Type 2 diabetes resolved in 77% and improved in 86% of patients after having had weight loss surgery.

- High blood pressure eliminated in 62% and improved in 75% of patients after weight loss surgery.

- High cholesterol reduced in 70% of patients who had weight loss surgery.

- Obstructive sleep apnea resolved in more than 85% of patients after weight loss surgery.

- With a mortality rate of 0.1%, the risk of weight loss surgery is now lower than nonoperative attempts at weight loss.

WHO Qualifies for Weight Loss Surgery

- Individuals with a BMI > 35 and high-risk comorbid conditions including diabetes, sleep apnea, high blood pressure, fatty liver disease, GERD, and high cholesterol

- Individuals with a BMI > 40

WHAT IS WEIGHT LOSS SURGERY?

- Restrictive Procedures – limit food intake by surgically decreasing the stomach size

- Malabsorptive Procedures – limit the body's ability to absorb calories by bypassing a segment of the intestines

Roux-en-Y Gastric Bypass

- Both restrictive & malabsorptive components

- Developed at the UIHC & performed for almost 50 years

- Produces up to 77% excess body weight loss

- Best weight-related comorbidity resolution

Vertical Sleeve Gastrectomy

- A primarily restrictive operation

- Produces up to 55% excess body weight loss at 5 years

- Intermediate weight-related comorbidity resolution

Adjustable Gastric Banding

- Strictly a restrictive operation

- Produces up to 47% excess weight loss at 15 years

- Least effective for comorbidity resolution

- 60% have revision or removal of band at 15 years
Should I Refer My Patient for Weight Loss Surgery?
A Guide for Providers

- The National Heart, Lung, and Blood Institute recommends surgery for weight loss as an option for "carefully selected patients with clinically severe obesity (BMI ≥ 40 or ≥ 35 with comorbid conditions) when non-surgical methods have failed and the patient is at high risk for obesity-associated morbidity and mortality."
- American Heart Association (AHA) March 2011 scientific statement says bariatric surgery can result in long-term weight loss and significant reductions in cardiac and other risk factors, noting the benefits of bariatric surgery may outweigh the risks for the severely obese.
- American Diabetes Association (ADA) Guidelines 2009 recommends bariatric surgery be considered for adults with BMI > 35 and Type 2 diabetes.
- International Diabetes Federation (IDF) 2011 guidelines state bariatric surgery should be an accepted option for people who have Type 2 diabetes and BMI ≥ 35.

Did you know?

Weight loss surgery is safe
- Risk of death from bariatric surgery is less than 0.1%.
- Overall likelihood of major complications is less than 2.5%.
- Risks of living with morbid obesity far outweigh the risks of undergoing bariatric surgery.

Weight loss surgery is effective
- Surgery results in improvement or resolution of more than 30 obesity-related conditions.
- Gastric bypass resolves Type 2 diabetes in nearly 90% of patients.
- Cuts risk of developing coronary heart disease in half.
- Resolves obstructive sleep apnea in more than 85% of patients.
- High blood pressure eliminated in 62% and improved in 79% of patients.

Weight loss surgery is durable
- Patients may lose 30 to 30% of excess weight 6 months, up to 77% at 12 months and approximately 71% of their excess weight at 3 years following gastric bypass.
- On average, patients have lost 36% of their excess weight at 3 years following sleeve gastrectomy.
- The Adjustable Gastric Band produces up to 44% excess weight loss at 3 years.

Weight loss surgery extends both the length and quality of the patients’ life
- Patients may improve life expectancy by 89%.
- Patients may reduce their risk of premature death by 30 - 40%.
- Risk of death from diabetes down 92%, from cancer down 60% and from coronary artery disease down 56%.

Who should I refer and when?

- We recommend a six-month trial of supervised diet, exercise, and lifestyle modification prior to referral for weight loss surgery.
- For those patients with BMI ≥ 50 or BMI ≥ 40 with obesity-related comorbidities, earlier surgical consultation is warranted, as their success rates for nonsurgical weight loss are poor.
- Patients are eligible for weight loss surgery with a BMI of ≥ 40 or ≥ 35 with obesity-related comorbidities.
- Ineligible patients include those who do not meet the criteria for bariatric surgery based on BMI ≥ 35, those with uncontrolled major psychiatric illness or eating disorder, people with current alcohol or drug abuse, or children under the age of 18 (UIHC).

What services will be provided to my patients?

- A multidisciplinary approach to the treatment of obesity incorporating diet and nutritional education, lifestyle, behavioral changes, and surgical options at an ACS/ASMBS Center of Excellence (COE).
- Short waiting times for new patient evaluations.
- Monthly free bariatric support group meetings.
- 100% laparoscopic surgery rates providing for decreased post-operative pain, wound complications, and time for convalescence.
- Life-long follow-up.
- Behavioral Therapy/Goal setting.
- A thoughtful consideration on the available operative approaches for each patient based on his or her medical comorbidities, surgical history, and expectations.

What operations are offered at the UIHC?

- Roux-en-Y Gastric Bypass
- Sleeve Gastrectomy
- Adjustable Gastric Band

UI referral line for physicians 800-322-8442
Office phone 319-356-1887
Web www.uihealthcare.org/bariatric/
Email obesitysurgery@uiowa.edu

UI call center for patients 800-777-8442
Office fax 319-353-6192
Questions and/or Comments?