Technical Aspects
of
Bariatric Surgical Procedures

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Disclosures

• Allergan, Inc. (Past)
  – Faculty Member
  – Educational Consultant

• TransEnterix, Inc. (Past)
  – Clinical Advisory Board Member
  – Educational & Development Consultant
1991 NIH Consensus Conference

- BMI > 40 are potential candidates
  - Obesity impairs quality of life
  - Understand how lives will change
- BMI between 35 and 40
  - If high risk co-morbidity present
  - Co-morbidity interfering with life
Body Mass Index vs. Mortality

Exponential Increase in Risk

TABLE ES-2:

**CLASSIFICATION OF OVERWEIGHT AND OBESITY BY BMI**

<table>
<thead>
<tr>
<th>Obesity Class</th>
<th>BMI (kg/m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt; 18.5</td>
</tr>
<tr>
<td>Normal</td>
<td>18.5 – 24.9</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0 – 29.9</td>
</tr>
<tr>
<td>Obesity I</td>
<td>30.0 – 34.9</td>
</tr>
<tr>
<td>Obesity II</td>
<td>35.0 – 39.9</td>
</tr>
<tr>
<td>Extreme Obesity III</td>
<td>≥ 40</td>
</tr>
</tbody>
</table>
Basic Principles of Weight Loss

• Restriction

• Malabsorption

• Behavioral Modification

• Increased Caloric Expenditure
Surgical Therapy for Obesity

Goals of Bariatric Surgery:
• Improve Health
• Improve Quality of Life
• Increase Lifespan
• Not cosmetic—this is only a side effect
  ... an important side effect for patients
BARIATRIC SURGERY
Selection Criteria

1. Morbidly obese
2. Age 18 – 70 +
3. No major Psychiatric problems
4. Failed dietary attempts
5. Understand lifestyle changes
6. **No nicotine use … EVER again**
7. No ETOH abuse
8. Attend Bariatric Lecture
DIETARY RULES OF THE GAME FOR SUCCESS AFTER BARIATRIC SURGERY

1) NO SNACKING
2) PROTEIN FIRST
3) EXERCISE
4) DRINK A LOT OF WATER
5) DAILY VITAMINS
Operative Considerations
Long Term

- No Straws … Ever please
- NSAIDs/Nicotine = Ulcers/Perforation
- Readmission for vomiting & dehydration
  - Must receive Thiamine (B1) before IV fluids
  - NPO initially for imaging studies
- NGT/OGT should **never** be placed without surgeon assistance … even years later
Insurance Requirements

• Medically managed weight loss program
  – Policy dependent
• Psychiatric evaluation – obesity specific
• H pylori testing / treatment
• Letter of medical necessity
• BMI > 40
• BMI > 35 with comorbidities
Scott & White Health Plan
Employees Benefit

• Coverage Provisos for 2014…
  – Five Year Continuous SWH Employment
  – Complete Accepted Medically Supervised Weight Loss Program 3 Months
  – Drug/Toxicology Screening
  – $4000 Specific Copay
  – “Shared Decision Making” on Weight Loss
Our Center’s Requirements

• Age Appropriate Health Management
  – Colonoscopy
  – Mammogram
  – Pap or Well Woman

• History Driven Testing
  – Cardiac Evaluation
  – Nicotine Cessation
  – OSA Testing and Treatment
Operations Performed

- Laparoscopic Adjustable Gastric Banding
- Laparoscopic Sleeve Gastrectomy
- Laparoscopic Roux-en-Y Gastric Bypass
Potential Complications

• **Universal to any surgery:**
  – bleeding
  – infection
  – hernia
  – bowel obstruction
  – stroke
  – pneumonia
  – myocardial infarction
  – death
SURGICAL APPROACH: Improved Outcomes

• **Laparoscopic**
  
  – 5-6 small incisions in the upper abdomen each 1-2 cm (depending on the procedure)
  – Reduces complication rate
30 Day Morbidity & Mortality - NSQIP

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Morbidity</th>
<th>Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lap Gastric Band</td>
<td>2.6%</td>
<td>0.09%</td>
</tr>
<tr>
<td>Lap Gastric Bypass</td>
<td>6.69%</td>
<td>0.17%</td>
</tr>
<tr>
<td>Open Gastric Bypass</td>
<td>13.18%</td>
<td>0.79%</td>
</tr>
</tbody>
</table>

Source: Lancaster, Surgical Endoscopy 2008

4.65x Mortality Rate!!!
Laparoscopic Adjustable Gastric Banding

- A silicone band is placed around the upper part of the stomach
  - A small pouch is created
  - Stomach holds less food
  - Induces feeling of satiety
- Operating time = 1 hour
- Usually same day procedure
- Return to work in 1-2 week
## Adjustable Gastric Band

### Advantages
- Adjustable – customized per patient
- Least invasive option
- No stomach stapling, cutting or intestinal rerouting
- Easier to reverse
- Lowest operative complication rate – no leaks
- Low malnutrition risk
- Satiety-inducing procedure
- OR time = 1 hour or less
- Same day surgery in most cases

### Disadvantages
- Slower initial weight loss than gastric bypass
- Regular follow-up **CRITICAL** for optimal results
Laparoscopic Adjustable Gastric Band

Robert O. Carpenter, MD
Brandon Williams, MD
William O. Richards, MD
Contrasted swallow study out of the PACU
Complications Specific to Gastric Banding

- Band slippage (2 - 13%)
- Band erosion (0.1 - 3%)
- Band/port failure (0.7 - 11%)
- Infection (0.4 - 1%)
- Obstruction (0.2-1.6%)
- Esophageal/pouch dilation (10%)

- Reoperation rate: 10-15%

FAILURE Rate shown to be > 50%...
Misconceptions…

“It’s easily reversible …”

“I don’t want to do anything permanent …”

“I just need to loose a few pounds & then …”

“I can just have another operation if …”
My Opinion and Practice was…

BMI > 49 …

“No Band for YOU!!!”
My Opinion and Practice is…

Regardless of BMI …

“No Band for YOU!!!”
Laparoscopic Sleeve Gastrectomy
Laparoscopic Vertical Sleeve Gastrectomy

Robert O. Carpenter, MD
Brandon Williams, MD
William O. Richards, MD
Laparoscopic Sleeve Gastrectomy

**Advantages**
- Satiety-inducing procedure
- Reduces Ghrelin levels
- Minimal to no dumping
- Low malnutrition risk
- No intestinal bypass
  - Less risk of obstruction, leak, bleeding
- **Allow options for further surgery**

**Disadvantages**
- Considered investigational by some insurance providers
  - CMS & TriCare
  - Covered by …
  - SWHP Employees
  - United Healthcare
  - Aetna
  - Cigna
  - BCBS Federal
  - Healthcare Services Corporation (HCSC)
  - Operating corporation for BCBS plans for over 12.4M in IL, NM, OK & TX

2012 CMS Decision

2015???
Ghrelin After Sleeve Gastrectomy

Mean plasma ghrelin levels (fmol/ml)

Baseline  |  6 Months Post-Op

Langer Obesity Surgery 2005
## Co-Morbidity After Sleeve Gastrectomy

### 18 Months Post-Op

<table>
<thead>
<tr>
<th>Co-Morbidity</th>
<th>Remission</th>
<th>Improved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleep apnea</td>
<td>56.2%</td>
<td>87.4%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>76.9%</td>
<td>92.3%</td>
</tr>
<tr>
<td>Hypertension</td>
<td>62.5%</td>
<td>87.5%</td>
</tr>
</tbody>
</table>

Silecchia *Obesity Surgery* 2006
Complications Specific to Vertical Sleeve Gastrectomy

- Mortality: 0.2%
- Leak: 2.2%
- Bleeding: 1.2%
- Stricture: 0.6%
- Nausea
- Reflux

DeMaria, et al. SOARD, e2009
Laparoscopic Roux-en-Y Gastric Bypass

- Restrictive & Malabsorptive
- Most frequently performed bariatric procedure in the US
Laparoscopic Roux-en-Y Gastric Bypass

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Roux-en-y Gastric Bypass

Mechanism of action: Early satiety

Calories

0 400 800 1200 1600 2000 2400 2800

Months PostOp

6 12 18 36 48
Roux-en-y Gastric Bypass
Mechanism of action

- Behavioral modification
- High carbohydrate meals (sweets) cause “Dumping syndrome”
  - Diarrhea, cramps, nausea, fast heart rate, sweating, tremor and dizziness
  - Causes patients to choose healthier foods
Weight Loss after Gastric Bypass

Mean Weight Loss - GB [lbs]
Laparoscopic Gastric Bypass

### Improvement rate

<table>
<thead>
<tr>
<th>Condition</th>
<th>Improvement Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>100%</td>
</tr>
<tr>
<td>High Blood Pressure</td>
<td>88%</td>
</tr>
<tr>
<td>Heartburn</td>
<td>96%</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>93%</td>
</tr>
<tr>
<td>Urinary Incontinence</td>
<td>83%</td>
</tr>
<tr>
<td>Joint pain</td>
<td>88%</td>
</tr>
</tbody>
</table>

GASTRIC BYPASS
The Scott & White Experience

• Average % EWL: 2004 – 2009
  – 6 months  63 %
  – 12 months 79 %
  – 24 months 79 %
  – 36 months 73 %
Complications Specific to Gastric Bypass

- Anastomotic leak 2.0%
- Bleeding 1.9%
- Pulmonary embolus 0.4%
- Wound Infection 3.0%
- Pneumonia 0.1%
- GI bleed 1.9%
- Stomal stenosis 4.3%
- Bowel obstruction 2.7%
- Ventral hernia 0.5%

Podnos et al. Archives of Surgery 2003
Thank You

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