Revisional Bariatric Surgery

Amir Mehran, MD, FACS
Director of Bariatric Surgery
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Objectives:

- "Accepted" guidelines for revisional bariatric surgery
- Surgical options
- Complications & outcomes
Revisional bariatric surgery:

- 140-170,000 primary bariatric procedures performed in the US every year.
- 10-25% require some form of revision
Revisional surgery:

- More likely to need revision:
  - JIB
  - VBG
  - Uncut RYGBs & horizontal gastroplasties
  - Adjustable Bands
  - Mini-loop bypass
Revisional surgery:

- Less likely to need revision:
  - Cut RYGB
  - BPD/DS
Some agreement:

- **Restrictive operations (AGB, VBG):**
  - convert to hybrid (RYGB) or purely malabsorptive procedures (DS)

- **Malabsorptive operations (JIB, DS):**
  - Total reversal
  - lengthen the common channel

- **Hybrid (RYGB):**
  - add more restriction (trim pouch, band the GJ)
  - malabsorption (shorten the common channel)
Full agreement:

- ‘Why do it’ factor critical
- “Laws of Diminishing Returns”
- Higher morbidity and mortality
- To be done by experienced surgeons
Revisional Bariatric Surgery

- Complications
- Nasty surprises
- Success

Robert Brolin, MD
Bariatric Revision Course
San Francisco 10/2006
Higher M&M

- Ken Jones (SOARD 2005)
  - Literature review
  - 17 open papers: 838 pts
    - Complications: 14%
    - Mortality: 0.8%
  - 3 lap papers: 64 pts
    - Complications: 9%
    - Mortality: 0%
    - Avg. OR time: 4.5 hrs
Higher M&M

- Ken Jones (SOARD 2005)
  - Own data
  - 141 revisional surgeries
  - Compared to primary RYGB
    - 5-10 fold increase in complications
    - 12% vs. 1.4% re-operation rate
  - Guidelines to revisional surgery
Cates (Arch Surg 1990)

- 32 revisional surgeries (UCLA)
- 2.4 operations per patient
- 23 pts had additional surgeries (72%)
- 4 deaths (12%)
Reoperative Bariatric Surgery

Lessons Learned to Improve Patient Selection and Results

Kevin E. Behrens, M.D., C. Daniel Smith, M.D., Keith A. Kelly, M.D., and Michael G. Sarr, M.D.

From the Department of Surgery, Mayo Clinic and Mayo Foundation, Rochester, Minnesota

Objective
The purpose of this study was to determine the spectrum of presentation, safety, and efficacy of reoperative bariatric surgery.

Summary Background Data
The only lasting therapy for medically complicated clinically severe obesity is bariatric surgery. Several operative approaches have resulted in disappointing long-term weight loss or an unacceptable incidence of complications that require revisionary surgery.

Methods
Sixty-nine consecutive patients who underwent reoperative bariatric surgery from 1995 to 1998 were observed prospectively. One, two, or three previous bariatric procedures had been performed in 77%, 18%, and 5% of patients, respectively. Reoperation was required for unassessable weight loss after gastrostomy or gastric bypass (69%), metabolic complications of jejunoileal bypass (23%), or other complications (18%), including stomal obstruction, ulceration of the gastric pouch, or anastomotic leaks. Revisionary procedures included conversion to vertical banded gastroplasty (33% of operations) and vertical Roux-en-Y gastric bypass (52% of operations). Partial pancreateoduodenectomy was used selectively in four patients with severe, medically complicated obesity.

Results
A single patient died postoperatively of a pulmonary embolus; serious morbidity occurred in 11%. Weight loss (± SEM) after reoperation for unsuccessful weight loss was greater with gastric bypass than with vertical banded gastroplasty (54 ± 6% versus 24 ± 6% of excess body weight). Metabolic complications of jejunoileal bypass were corrected, but 63% of the patients were dissatisfied with their postoperative lifestyle because of changes in eating habits or weight gain (64% of patients). Stomal complications and esophageal reflux symptoms were reversed in all patients.

Conclusions
Reoperative bariatric surgery in selected patients is safe and effective for unsatisfactory weight loss or for complications of previous bariatric procedures. Conversion to gastric bypass provides more effective weight loss than vertical banded gastroplasty.

Figure 1. Changes in BMI after revisionary bariatric surgery (mean follow-up, 23 ± 2 months).
Diminishing returns:

16% BMI reduction

Safety and Long-Term Efficacy of Revisional Surgery in Severe Obesity

Peter N. Benotti, MD, Englewood, New Jersey, R. Arthur Fentress, MD, PhD, Boston, Massachusetts

BACKGROUND: A National Institutes of Health Consensus Conference in 1981 established gastric surgery as accepted therapy for the treatment of severe obesity. The increasing prevalence of obesity in the United States, and the increasing number of patients undergoing gastric surgery for severe obesity, result in substantial numbers of patients being considered for revisional surgery. The indications and efficacy of revisional surgery are important considerations. Sixty-three patients were followed prospectively after undergoing revisional surgery for obesity between 1981 and 1994. All patients had previously undergone obesity operations. Weight data were recorded at the time of original obesity surgery, at revisional surgery, and at most current follow-up. Compliances following revisional surgery were maintained.

RESULTS: The follow-up in the group is 95%. Revisional surgery after obesity surgery was associated with a 15% mortality rate and a serious complication rate of 15%. Body mass index (BMI) at the time of revisional surgery was 28.6 kg/m², and at last follow-up 24 - 10 kg/m² (P < 0.001 vs original BMI). Those patients whose original BMI was >30 kg/m² “lost significantly more weight” (P<0.0001) than those with an original BMI >30 kg/m².


There is an increasing United States health problem of severe obesity, defined as weight 150% above desirable or 35 kg/m². These patients are at risk for accelerated mortality and excess costs of health care because of long-term weight control. Early and late death in these patients is associated with diabetes, coronary artery disease, hypertension, pulmonary disease, and malignancy.

MATERIALS AND METHODS

Sixty-three patients were followed prospectively after undergoing revisional surgery between 1990 and 1994. Those patients were all referred for consideration of revisional surgery following failed or complicated previous operations for control of severe obesity. Data were recorded from both clinic and hospital records, as well as telephone surveys of patients. The data collected include the original operation procedure, the date of the procedure, the patient’s weight at the time of the operation, the patient’s age at the time of the operation, the morbidity and mortality of the revisional procedure, the interval health status between original operation and the present, and the weight at the most recent follow-up. Weight data at the time of original operation, revisional operation, and post follow-up are analyzed using Student’s t-test for paired samples.

From the Department of Surgery (NABS), Englewood Hospital and Medical Center, Englewood, New Jersey, and the Department of Surgery (FENTRESS), Boston University School of Medicine, Boston, Massachusetts.

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Figure 1. The total change in BMI from the time of original operation and the follow-up interval (coefficient: 0.0006, two-tailed significance, P = 0.932).

Change in Body Mass Index

16% BMI reduction

Overall Interval in Weeks

0.000

0.010

0.025

0.050

0.100

0.200

0.400

0.800

1.600

3.200

6.400

12.800

None

16% BMI reduction

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Is laparoscopy better?

Reoperative Laparoscopic Roux-en-Y Gastric Bypass: An Experience with 49 Cases

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1Department of Surgery; 2Department of Internal Medicine, Centre Hospitalier Universitaire Vaudois Lausanne, Switzerland; 3Department of surgery, Hôpital du Châtelard, Aigle-Monthey, Switzerland

Background: Long-term complications leading to reoperation after primary bariatric surgery are not uncommon. Reoperations are particularly challenging because of tissue scarring and adhesions related to the first operation. Reoperations must address the complications related to the primary and, at the same time, prevent weight regain that would inevitably occur after simple reversal. Conversion to focus on gastric bypass (RYGBP) has repeatedly been demonstrated to be the procedure of choice in most situations. It has traditionally been performed through an open approach. Our aim is to describe our experience with the laparoscopic approach in reoperations to RYGBP over the past 5 years.

Methods: All patients undergoing laparoscopic RYGBP as a reoperation were included in this study. Patients with multiple previous operations or patients with band erosion after gastric banding were excluded from laparotomy. Data were collected prospectively.

Results: Between June 1999 and August 2004, 49 patients (44 women, 5 men) underwent laparoscopic reoperative RYGBP. The first operation was gastric banding in 32 and vertical banded gastroplasty in 15. The mean duration of the reoperation was 196 minutes. No conversion to open was necessary. Overall mortality was 0%, with major complications in 2 patients (4%). Weight loss, or weight maintenance, was satisfactory, with a BMI ≤5 kg/m² up to 4 years in close to 75% of the patients.

Conclusion: Laparoscopic RYGBP can be safely performed as a reoperation in selected patients provided that the surgical expertise is available. These procedures are clearly more difficult than primary operations, as reflected by the long operative time. Overall mortality and morbidity, however, are not different. Long-term results regarding weight loss or weight maintenance are highly satisfactory, and comparable to those obtained after laparoscopic RYGBP as a primary operation.

Key words: Mortal obesity, bariatric surgery, reoperation, laparoscopy, gastric bypass.

Introduction

Mortal obesity is a serious illness with potentially severe medical, social, and financial consequences. Conservative therapy, including diet and/or behavior therapy, is notoriously ineffective in this patient population, and surgery is currently the only effective treatment. With the growing epidemic of obesity throughout the world, and with the advent of laparoscopic techniques, a greater number of patients are submitted to bariatric surgery every year.

Unfortunately, a significant number of these patients will require surgical revision in the long-term, either because of complications or because of insufficient weight loss. Revision rates up to 56% have been reported after vertical banded gastroplasty (VBG),24 and rates between 20 and 33% are commonly quoted after laparoscopic adjustable gastric banding (LAGB).25 Traditionally, reoperative procedures have been performed using an open approach, as previous surgery was usually considered as a contraindication for laparoscopy. With the introduction of new technologies, such as the ultrasonic shears, and with the growing technical expertise of bariatric laparoscopic surgeons, several authors have successfully performed reoperative surgery in bariatric patients through the laparoscope.24-27 In this study, we present our experience with laparoscopic revisionsal Roux-en-Y gastric bypass (RYGBP) over a 5-year period.

Table 2. Early complications

<table>
<thead>
<tr>
<th>Type of complication</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leak at the gastrojejunostomy</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Leak at the jejunojejunostomy</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Intraabdominal infection</td>
<td>3 (6%)</td>
</tr>
<tr>
<td>Left pleural effusion</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Bronchopneumonia</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Acute acalculous cholecystitis</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Wound infection</td>
<td>2 (4%)</td>
</tr>
<tr>
<td>Temporary peroneal nerve palsy</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>

Total patients with complication(s)                       | 10 (20%)   |
Patients with major complication(s)                        | 2 (4%)     |
Mortality                                                  | 0          |

Table 3. Late complications

<table>
<thead>
<tr>
<th>Type of complication</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stenosis at the gastrojejunostomy</td>
<td>4 (8%)</td>
</tr>
<tr>
<td>Torsion of the Roux-en-Y loop with post-prandial abdominal pain</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Insufficient weight loss</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Gastro-cutaneous fistula</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Incisional hernia (after laparotomy)</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>

Total patients with late complication(s)                   | 7 (14%)    |
Is laparoscopy better?

- 27 lap revisional surgeries from AGB & VBG
- 20% morbidity
- 0% death/leak
- 15% required second surgery

Laparoscopic Reoperative Bariatric Surgery: Experience from 27 Consecutive Patients

Michel Gagner, MD, FACS, FRCS;
Paolo Gentileschi, MD; John de Csepel, MD; Subhash Kini, MD, FRCS; Emma Patterson, MD, FRCS;
William B. Inabnet, MD; Daniel Herron, MD; Alfons Pomp, MD, FRCS

Background: 10 to 25% of patients undergoing bariatric surgery will require a revision, either for unsatisfactory weight loss or for complications. Reoperation is associated with a higher mortality and has traditionally been done in open fashion. The purpose of this study was to determine the safety and efficacy of reoperative surgery using a laparoscopic approach.

Methods: A retrospective review of medical records over a 22-month period was conducted. 27 consecutive obesity surgery patients, who had undergone a laparoscopic revision, were identified. 26 of the 27 patients were women. The average age was 39 years (range 17 to 63). The average body mass index (BMI) was 37.6 kg/m² (range 32 to 52), which increased to 42.7 kg/m² (range 39 to 58) before reoperations. 26 of the 27 reoperations were indicated for insufficient weight loss. On average, revision was undertaken 22 months after the primary procedure (range 12 to 24 months).

Results: 24 of the 27 laparoscopic reoperations were conversions to a gastric bypass. A second reoperation was indicated for insufficient weight loss on four occasions. In one case, conversion to open surgery was required. The average operative time was 232 ± 148.5 minutes (range 120 to 495) and length of hospital stay was 3.7 days (range 1 to 5). 72% of patients (6) had experienced complications, including pneumonia, gastric remnant dilation, gastric perforation, anemia, post–site hernia and protein malnutrition. There was no mortality in the study. The average BMI was 35.9 kg/m² (range 27 to 45.9) 8 months after surgery (range 1 to 22 months). Compared with a preoperative BMI of 42.7 kg/m², the weight loss was statistically significant (p < 0.001).

Conclusion: Our results compare favorably with those reported for open reoperative bariatric surgery. A laparoscopic approach may be considered a feasible and safe alternative to an open operation.

Key words: morbid obesity, reoperative bariatric surgery, laparoscopy

Introduction

Morbid obesity is a serious, progressive disease with medical, social, psychological and economic consequences. In the United States, 2% of men and 6% of women are morbidly obese and have morbid obesity rates up to 12 times greater than normal weight individuals.1,2 Surgery is the most effective therapy, because non-surgical approaches, including low-energy diets and behavior modification, are not successful in the long-term.3 As a result, thousands of primary bariatric procedures have been performed all over the world. An increasing number of patients subsequently require revision of a failed bariatric operation, either for weight control or for complications. Using a Kaplan–Meier analysis to correct for the length of follow-up, van Overmeir et al4 reported a 56% incidence of revision after primary vertical banded gastroplasty (VBG).

References

Is laparoscopy better?

Laparoscopic Reoperative Bariatric Surgery: Experience from 27 Consecutive Patients

Michel Gagner, MD, FACS, FRSC; Paolo Gentileschi, MD; John de Csepel, MD; Subhash Kini, MD, FRCS; Emma Patterson, MD, FRCS; William B. Inabnet, MD; Daniel Herron, MD; Alfons Pomp, MD, FRCS

Division of Laparoscopic Surgery, Mount Sinai School of Medicine, New York, NY, USA

Background: 10 to 25% of patients undergoing bariatric surgery will require a revision, either for unsatisfactory weight loss or for complications. Reoperation is associated with a higher mortality and has traditionally been done in open fashion. The purpose of this study was to determine the safety and efficacy of reoperative laparoscopic reoperation.

Methods: A retrospective review of medical records over a 2-year period was conducted. 27 consecutive reoperative bariatric patients, who had undergone a laparoscopic revision, were identified. 26 of the 27 patients were women. The average age was 48.3 years (range 25 to 59 years) and average original preoperative body mass index (BMI) was 51.4 kg/m² (range 42 to 66.5). The 27 primary bariatric operations consisted of vertical banded gastroplasty (12), gastric band placement (9) and gastric bypass (5). 17 of them were open procedures. After the primary surgery, the lowest average BMI was 27.6 kg/m² (range 21 to 52), which increased to 46.7 kg/m² (range 29 to 61) before reoperation. 34 of the 27 reoperations were indicated for unsatisfactory weight loss. On average, revision was undertaken 32 months after the primary procedure (range 12 to 240 months).

Results: 24 of the 27 laparoscopic reoperations were conversions to a gastric bypass. A second reoperation was indicated for unsatisfactory weight loss on four occasions. In one case, conversion to open surgery was required. The average operative time was 232 ± 18.6 minutes (range 130 to 405) and length of hospital stay was 3.7 days (range 1 to 5). 23% percent of patients (5) experienced complications, including pneumothorax, gastric remnant dilation, gastrostomy stomal stenosis, postoperative bleeding, and protein malnutrition. There was no mortality in the study. The average BMI was 36.0 kg/m² (range 27 to 45.5) 8 months after surgery (range 1 to 22 months). Compared with a preoperative BMI of 42.7 kg/m², the weight loss was statistically significant (p=0.001).

Conclusion: Our results compare favorably with those reported for open reoperative bariatric surgery. A laparoscopic approach may be considered a feasible and safe alternative to an open operation.

Keywords: mortality, reoperative bariatric surgery, laparoscopy

Introduction

Obesity is a serious, progressive disease with medical, social, psychological and economic consequences. In the United States, 2% of men and 6% of women are morbidly obese and have mortality rates up to 12 times greater than normal weight individuals. Surgery is the most effective therapy, because non-surgical approaches, including low-energy diets and behavioral modification, are not successful in the long-term. As a result, thousands of primary bariatric procedures have been performed all over the world. An increasing number of patients subsequently require revision of a failed bariatric operation, either for weight control or for complications. Using a Kaplan-Meir analysis to correct for the length of follow-up, van Gemert et al reported a 56% incidence of revision after primary vertical banded gastroplasty (VBG)
Reasons:

- ‘Insufficient’ weight-loss
- Weight gain
- Complications
  - Technical
  - Lifestyle & health disabling
Insufficient weight-loss?

- Common thread in revisional surgery
  - How is it defined?
  - How realistic are the “IBW” charts?
- Is the goal of initial surgery to trim the patient down or rid them from co-morbidities?
How insufficient is insufficient?

- Literature review
- Significant or complete resolution of co-morbidities with 10-20% weight loss

References
Weight regain:

- 5-15% post RYGB weight gain not atypical

- Reasons:
  - Patient
  - Patient
  - Patient
  - Dilated pouch size?
  - Dilated GJ anastomosis?
Predictors of post-RYGB success:

The role of psychosocial and behavioral factors

Edward C. Ray, MD, Mark M. Niswander, MD, Stanley Bigatol, MD, and Harry S. Can, MD, FACS, Rochester, NY

Background: Success after bariatric surgery requires behavioral modification. This study analyzed outcomes after Roux-en-Y gastric bypass surgery performed by a single surgeon between 1994 and 2002, and evaluated preoperative factors with long-term outcome.

Methods: A bariatric database has been maintained since 1994. Beginning in April 1997, patients completed preoperative and annual follow-up questionnaires that included an array of psychosocial measures. We hypothesized that certain attributes are predictive of success after surgery.

Results: Of the 424 patients in our database, 113 met criteria after 1997. A total of 96% were referred for follow-up at 1 year. Follow-up rates were significantly higher in patients who had surgery in 1997 versus 2002 (96% vs. 66%, p < 0.001). The most common symptoms were interoceptive, and weight loss was significantly associated with visceral fat loss (p = 0.03). Patients with higher depression scores, greater symptom distress, and greater symptoms of psychosocial dysfunction did not achieve weight loss, but their data did not reach significance.

Conclusions: Psychosocial and behavioral factors appear to predict greater weight loss after surgery. Ongoing follow-up and lifestyle modification may help decrease the incidence of psychosocial dysfunction and the risk of preoperative intervention in these with preoperative factors. Obesity (2003) 8:55-58

Do Psychosocial Variables Predict Weight Loss or Mental Health after Obesity Surgery? A Systematic Review

S. Heidert, B. H. Kielman, M. D. Wolf, J. Hendleman, and W. Seif

Abstract

Background: Predictors of weight loss and mental health after obesity surgery remain unclear. The aim of this study was to summarize the evidence regarding psychosocial factors and their impact on weight loss and mental health following obesity surgery.

Methods: We conducted a systematic review of all published studies on psychosocial factors and their impact on weight loss and mental health following obesity surgery.

Results: Our review included a total of 24 studies that were conducted in the last 2 decades with a follow-up period of at least 1 year.

Conclusions: Psychosocial variables are important predictors of weight loss and mental health following obesity surgery. Further research is needed to identify specific psychosocial interventions that can improve weight loss and mental health outcomes.

Review

Do Psychosocial Variables Predict Weight Loss or Mental Health after Obesity Surgery? A Systematic Review

S. Heidert, B. H. Kielman, M. D. Wolf, J. Hendleman, and W. Seif

Introduction

Prevalence of obesity grade III (BMI ≥ 35 kg/m²) is estimated to be 6.5% in men and 2.3% in women in the US and Canadian populations (1), respectively, with a constant increase in the last 2 decades (2). Morbidity and mortality are associated with obesity, including Type 2 diabetes, heart disease, and certain cancers (3). Surgery is considered the gold standard treatment for severe obesity (4). Psychosocial factors are important predictors of weight loss and mental health following obesity surgery (5). This review aims to summarize the evidence regarding psychosocial factors and their impact on weight loss and mental health following obesity surgery.

Methods

A systematic review of all published studies on psychosocial factors and their impact on weight loss and mental health following obesity surgery was conducted. The search was conducted in PubMed, Embase, and Scopus databases using relevant keywords.

Results

Our review included a total of 24 studies that were conducted in the last 2 decades with a follow-up period of at least 1 year.

Conclusions: Psychosocial variables are important predictors of weight loss and mental health following obesity surgery. Further research is needed to identify specific psychosocial interventions that can improve weight loss and mental health outcomes.

References


Emotional/binge/stress eating:

- Achilles heel of bariatric surgery
- Addiction replacement
- Coping mechanism
  - “Food is friend & does not judge”
  - Vicious cycle:
    - Eat to treat depression & stress
    - Increasing stress and depression with increasing weight
Allied Health:

- Psychological profile
  - treatment of depression & stress eating
  - identify alternative coping mechanisms
- Identify social support & stressors
- Alter eating & exercise habits
- Relapse due to insufficiency in above
- MORE critical in revisional surgery
Successful Outcomes

Personal Responsibility

“maintaining their weight was indeed their own responsibility and that the surgery was a tool that they used to reach and maintain a healthy weight”
Why revise RYGB?

- Weight regain
- Insufficient weight-loss:
  - Pouch dilatation?
  - Anastomotic size?
  - Short Roux limb length?
- Technical complications
RYGB revision:

- Band the GJ
- Trim the pouch
- Adjust limb lengths
Bessler (Obes Surg 2005)

- 8 pts
- Inadequate wt loss after RYGB
- AGB @ proximal gastric pouch
  - 40% excess wt loss
  - No complications in 2 years

- BANDs & rings: not complication free
  - Erosion, slippage, mega-esophagus, etc.
RYGB revision:

- Band the GJ
- Trim the pouch
- Lengthen the Roux limb
Roberts et al (Surg Endo 2007)

- 320 pts
- Pouch size measured on UGI
- 6 & 12 month wt loss results better in smaller pouch groups
Roberts et al (Surg Endo 2007)

- 320 pts
- Pouch size measured on UGI
- 6 & 12 month wt loss results better in smaller pouch groups
Muller et al (Obes Surg 2005)

- 334 RYGB patients
- 5 pouch dilatations on UGI (>60cc)
  - 3 weight regain
  - 2 poor pouch emptying
- Lap pouch reduction & GJ revisions
- 2 major complications
- Mean BMI 32 --> 28 @ 12 months
Does pouch size matter??

- Unknown
- Reduce if:
  - excessively large
  - symptomatic
  - failed maximum dietary & psych ‘tuneup’
RYGB revision:

- Band the GJ
- Trim the pouch
- Adjust limb lengths
Chopan (Obesity Surg. 2002)

- 134 randomized patients, >2 yr. f/u
- 75cm vs. 150cm in BMI<50
- 150cm vs. 250cm in BMI>50
- No difference in BMI<50
- In BMI>50: better wt. loss at 18 months in the 250cm group BUT no difference at 2 & 3 years
Brolin (J GI Surg 2002)

- 298 pts. With BMI >50; 5 yr f/u
  - 47 DRYGB: 75 cm from ICV; 152 with 150 cm common channel; 99 with 75 cm common channel
  - EWL: 64% vs. 61% vs. 56%
  - No difference in morbidity
  - More metabolic sequelae and anemia in DRYGB including TPN requirement
  - Advocate 150 cm common channel in pts. With BMI >50
Longer limbs:

- **Inabnet (Surg Endo 2003 & Obes Surg 2005)**
  - BMI < 50: inconsequential
  - BMI > 50: more weight loss
    - More nutritional side effects
  - How much longer?
    - Common channel?
    - Roux length?
    - BP limb length?
RYGB Revision

- Technical complications
  - Non-dilatable strictures
  - Intractable marginal ulcers
  - GGF
Anastomotic Strictures:

- **Incidence:** 4 – 27%
- **Presentation:**
  - dysphagia
  - solids --> liquids --> saliva
- **Etiology:**
  - tight closure?
  - ischemia?
  - adjacent marginal ulcer
Anastomotic Strictures:

**Diagnosis:**
- UGI
- EGD

**Treatment:**
- Balloon dilation:
- may require multiple attempts
- GJ revision
Marginal Ulcers:

- **Incidence:** 1-16%.
- **Etiology:** unknown
  - excess acid production
  - tension & ischemia?
  - foreign body reaction to staples/sutures?
  - Late vs early.
- **Presentation:**
  - epigastric burning & pain
  - perforation without prior symptoms
Marginal Ulcers:

- **Confirmation:** EGD
- **Prophylaxis:**
  - pre-op H. pylori treatment?
  - absorbable sutures?
  - Prophylactic meds?
- **Treatment:**
  - Carafate and PPI
  - Revision
Gastrogastric fistula:

- **Incidence:** 1-5%
- **Presentation:**
  - Asymptomatic
  - Marginal ulcers
  - Weight gain
- **Treatment:**
  - PPI & Carafate
  - Endoscopic clip, fibrin glue, suturing
  - Revisional surgery
Gastrogastric fistula:

- **Rosenthal et al.**
  (SOARD 2005 & JACS 2007)
  - Symptomatic incidence 1.2%
  - Pain, n/v, wt regain
  - Mean dx @ 80 days
  - Surgery:
    - Lap. fistula tract excision & remnant gastrectomy
Revision of the AGB:
Adjustable Gastric Banding:

- Very popular in Europe and Australia with over 10 year history
  - 1993-2005: >120,000 placed worldwide
- U.S. use since 2001
- FDA approved despite unfavorable early results
ASBS (2005)

- U.Mass. 10% re-operation
- MCV: 41% removal
- Italy: 60% removal
- Sweden: 58% removal
- Brazil: 29% removal
- Belgium: 90% removal (Himpens 2006)
Adjustable Gastric Banding:

- No consensus
- Europe & Latin America(?) moving away from it.
- Not covered by many insurance companies in California
BAND revision:

- Weight loss failure
- Complications
  - Port problems
  - Slippage
  - Erosions
  - Daily vomiting
  - Mega-esophagus
BAND revision:

- Rebanding is controversial
- Most convert to RYGB or DS
- Esophagectomy for unresolved megaesophagus
**Technique**

- clean up cardia and hiatus
- Open/excise the restrictive capsule
- Keep the AGB intact as long as possible
  - Retractor
  - Safe barrier for cautery
Pitfalls

- Pleural tear
- Bleeding
- Stomach tear
- Peroperative staple line dehiscence
  - Sleeve gastrectomy (DS)
  - Pouch (RYGB)
Mini-loop gastric bypass
Mini-loop gastric Bypass:

- Variation of similar surgery 60’s (abandoned)
- **Pro:**
  - One anastomosis
  - Shorter operative time
  - Same weight-loss results
- **Con:**
  - Bile reflux
    - Carcinogenic
  - Revisional surgery likely
DeMaria (2006)

- 32 pts
- 5 institutions @ Southeast USA
- Multiple operations
- True revision rate unknown secondary to unknown denominator
Revision of the BPD/DS:
BPD/DS revisions:

- Malnutrition
- Organ failure (liver, kidney, bones, CNS, etc)
- Lengthen the common channel
- Reverse completely
Revision of the BPD/DS:
Crookes (JACS 2007)

- 33 revisions in 701 pts for malnutrition
  - 3 CC elongation
  - 30 “kissing X”
    - Enteroenterostomy
      100 cm proximal to previous anastomosis
  
- 18 lb wt gain
When to draw the line?

- Individual surgeon choice
- Barring failures secondary to technical complications, most surgeons won’t attempt a second revisional surgery
Summary:

- ‘Why do it’ factor critical
- “Laws of Diminishing Returns”
- Expect many unexpected surprises
- To be done by experienced surgeons
- Higher morbidity and mortality